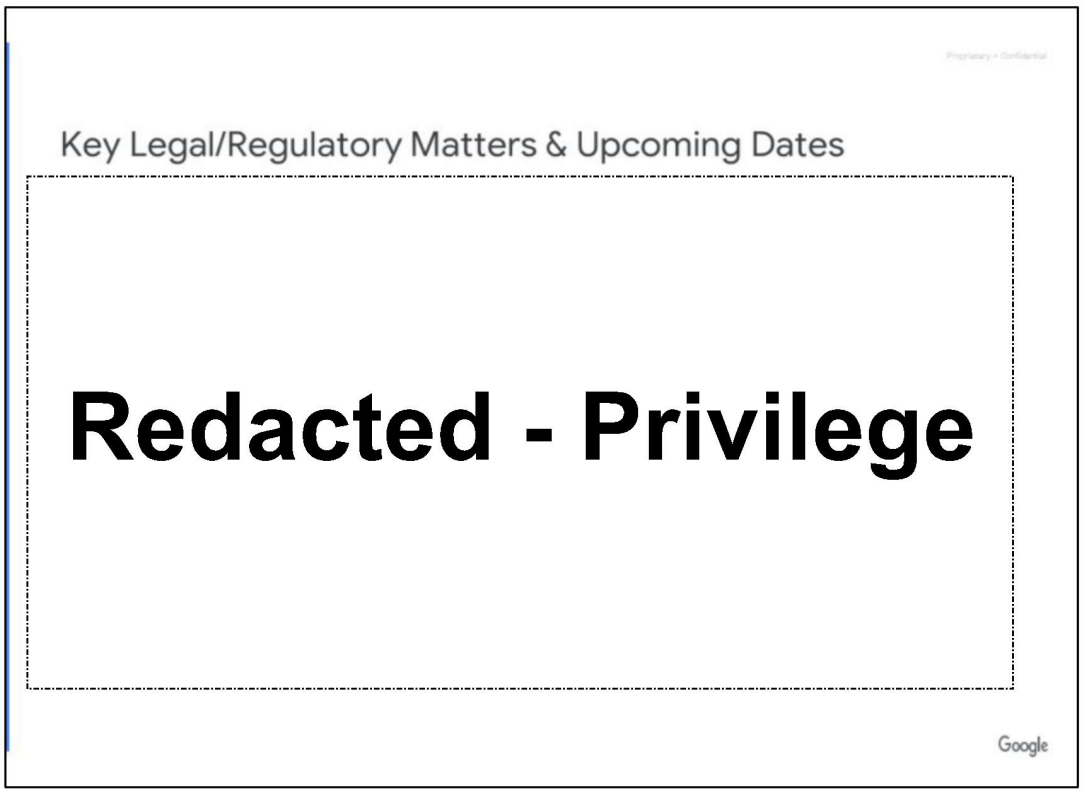
Exhibit D11
Public Redacted Version

EXHIBIT 29


Google
Play Policy Launch Timing Review
A/C privileged
Seeks advice of counsel
September 2, 2020

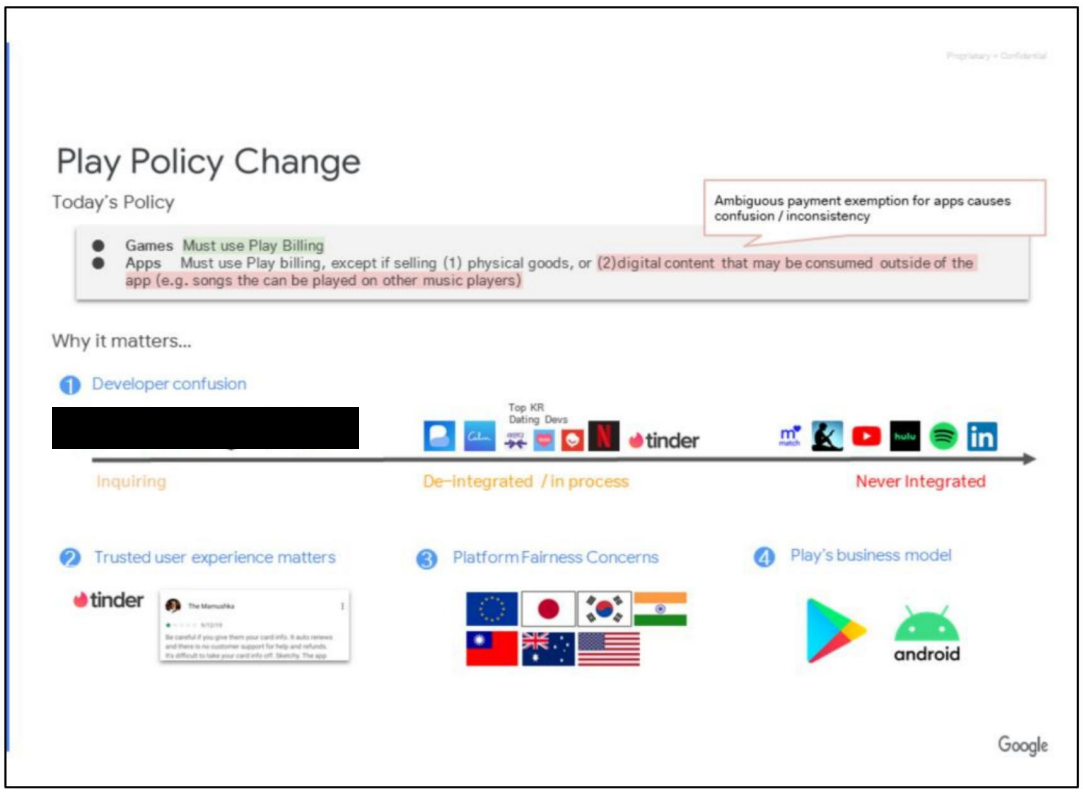
Agenda

- Summary of Partner & Market Status for Payments Policy Change
- Launch Timing considerations
- Messaging

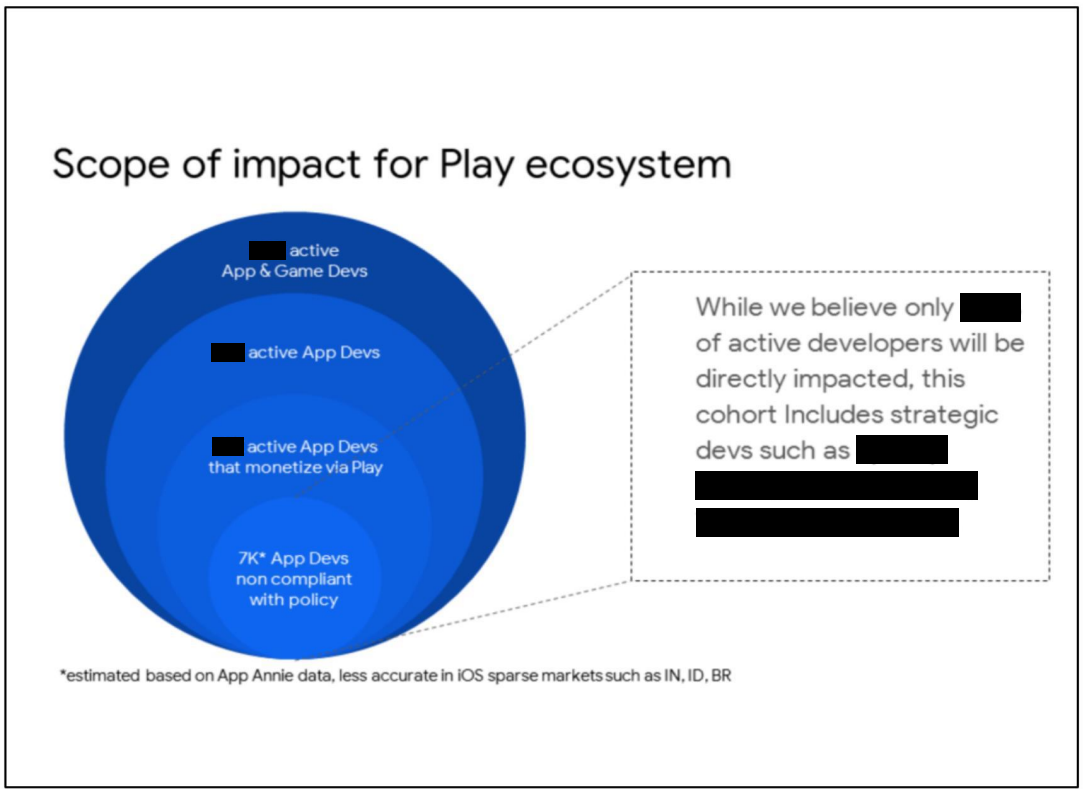

Key Legal/Regulatory Matters & Upcoming Dates
Redacted - Privilege
Google

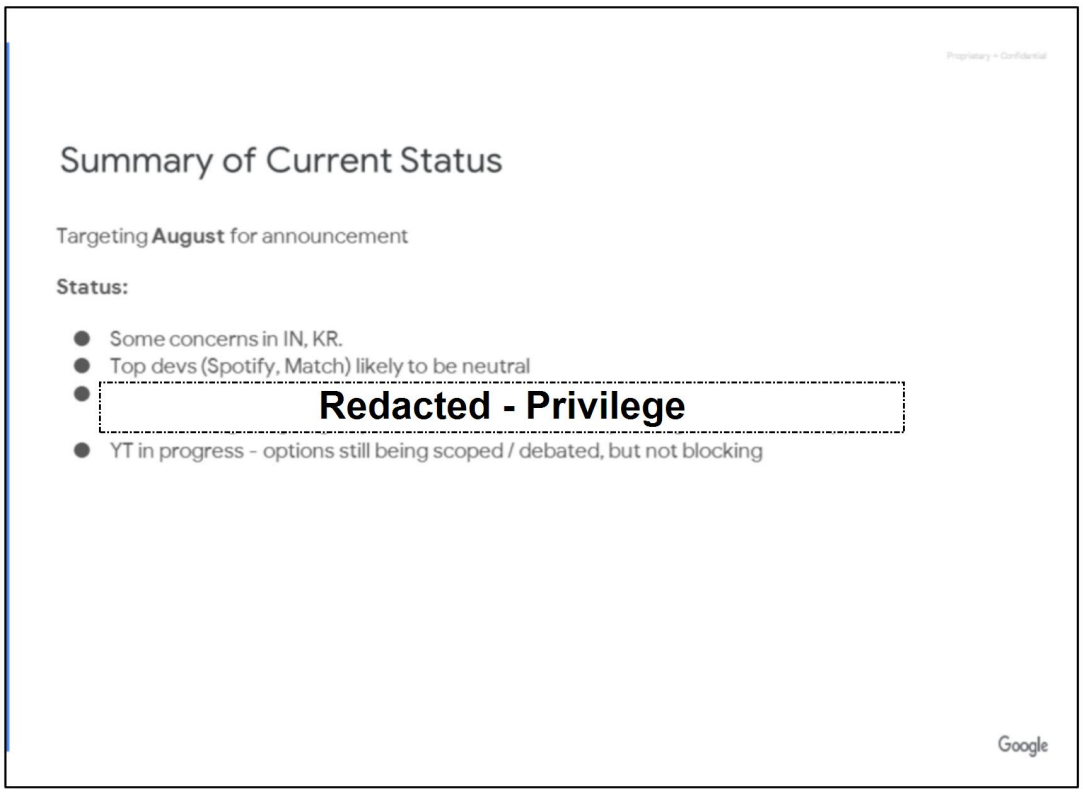

Google
Play Policy & Business Review
A/C privileged
Seeks advice of counsel
August 20, 2020

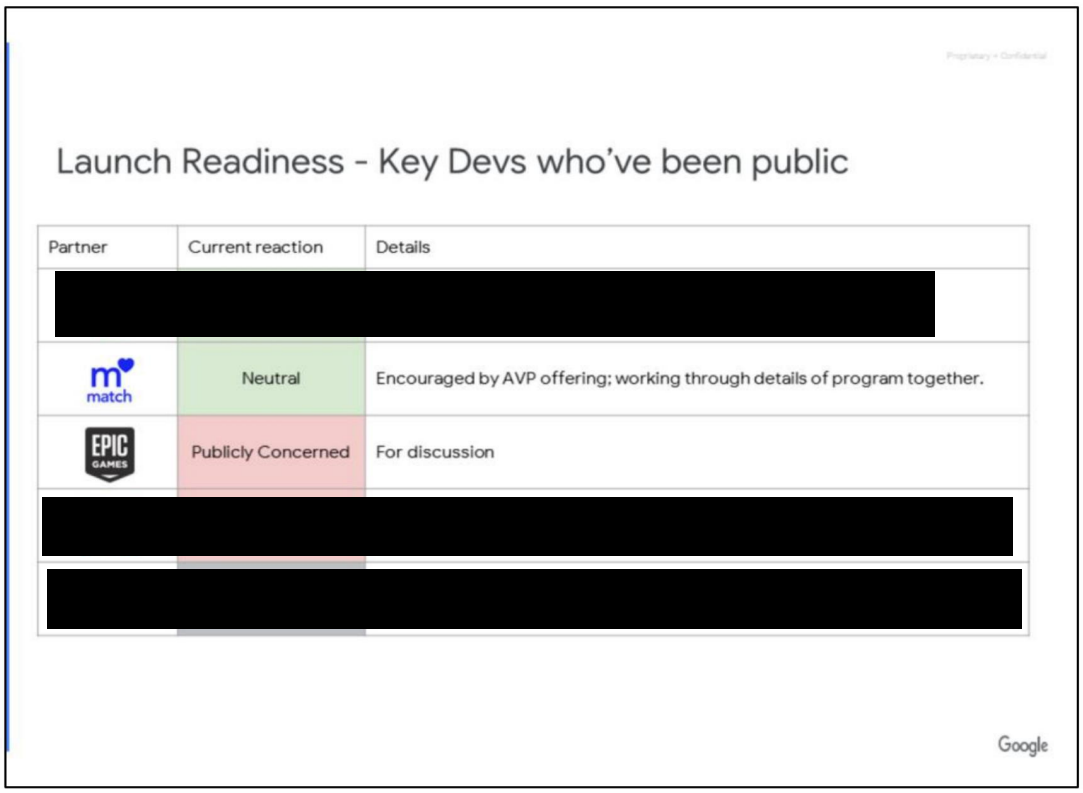
Contents



- Apps revenue is [redacted] of A&G revenue) and growing [redacted] y/y.
- P2B - revisiting why this is or is not a factor - acknowledge that this is still something that's important to do...ting why this is or is not a factor - acknowledge that this is still something that's important to do...


Scope of impact for Play ecosystem
[redacted] active App & Game Devs
[redacted] active App Devs
[redacted] active App Devs that monetize via Play
7K* App Devs non compliant with policy
While we believe only [redacted] of active developers will be directly impacted, this cohort Includes strategic devs such as [redacted]
*estimated based on App Annie data, less accurate in iOS sparse markets such as IN, ID, BR


Proprietary + Confidential
Summary of Current Status
Targeting **August** for announcement
Status:
Some concerns in IN, KR.
Top devs (Spotify, Match) likely to be neutral
Redacted - Privilege
YT in progress - options still being scoped / debated, but not blocking
Google



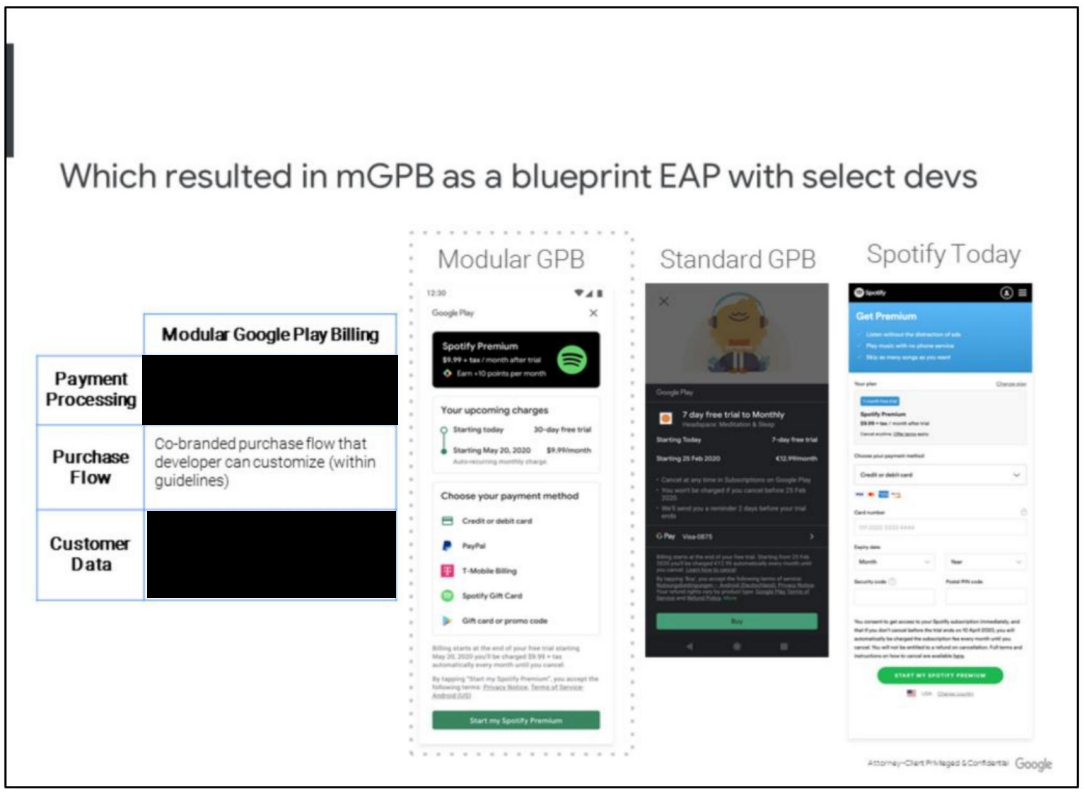
Launch Readiness - Key Devs who've been public

Partner	Current reaction	Details
[redacted]		
match	Neutral	Encouraged by AVP offering; working through details of program together.
EPIC GAMES	Publicly Concerned	For discussion
[redacted]		
[redacted]		

Google

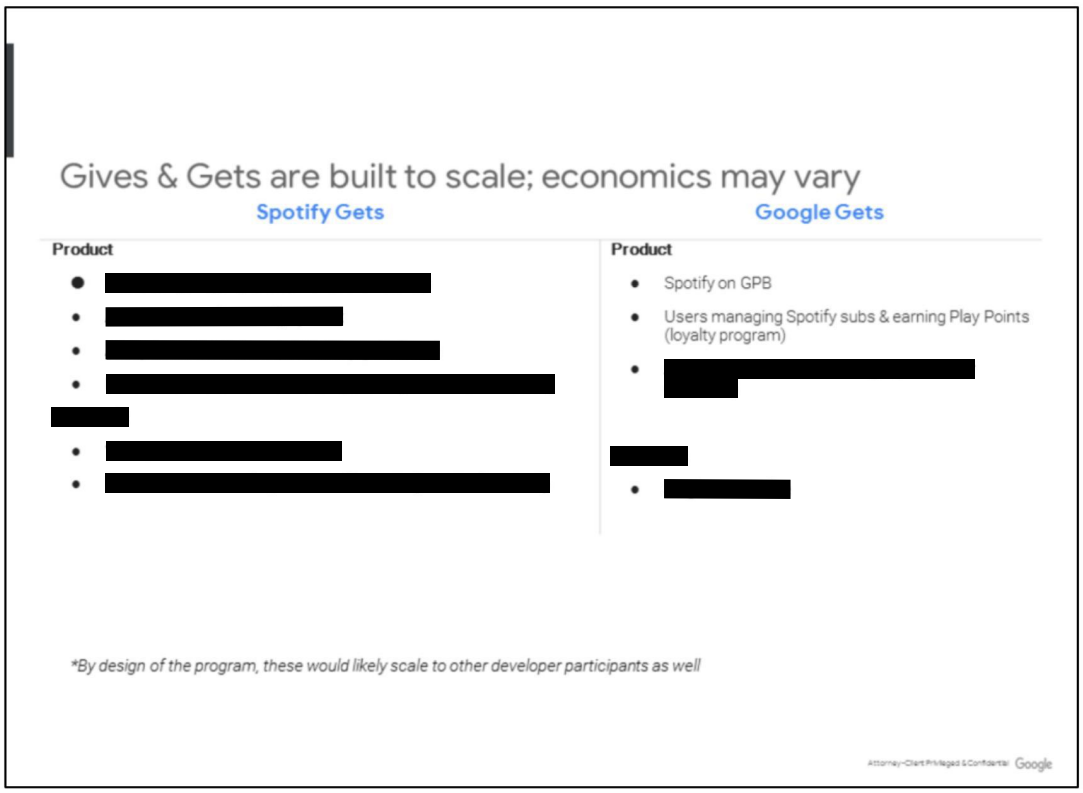
Most vocal against A


Launch Readiness - Key Devs also violating policy
[redacted]
Google



*Except if the user has a stored form of payment with Google that Google cannot share with developer [redacted]

Google Play is experimenting with ways that its in-app billing system can better support large scale, multi-platform, sophisticated developers. This pilot enables eligible developers to integrate with Play's billing system while maintaining certain elements of their own billing solutions:


Gives & Gets are built to scale; economics may vary
Spotify Gets
Product
Google Gets
Product
Spotify on GPB
Users managing Spotify subs & earning Play Points (loyalty program)
*By design of the program, these would likely scale to other developer participants as well
Google

Regional launch readiness & post-launch focus

Audience	Current Reaction	Focus post launch
NA	Mostly neutral	Wave 2 briefings, deploying programs
LATAM	Mostly neutral	Wave 2 briefings, deploying programs
EMEA (sub RU)	Mostly neutral	Wave 2 briefings, deploying programs
RU	Partners neutral, larger reg concerns	Resolve feedback from key partners & deploy programs, Telegram XFN engagement, PR narrative on Android helping dev ecosystem
IN	Concerns	PR narrative with gov't on how Android & Play are helping dev ecosystem, wave 2 briefings; deploying programs
AU	Mostly neutral	Wave 2 briefings; deploying programs
KR	Concerns	[redacted] deploy local and partner programs
JP	Mostly neutral	Wave 2 briefings, deploying programs

Google

KR: Leak has resulted in severe risks; augmented by delays

Context: KR Apps annual spend [redacted] and [redacted]

Workstreams	On track for positive / neutral launch?	Post launch focus?
Partners (incl. Carriers & News)	Leak resulted in us not owning the public message. Guidance from the local team is to announce ASAP so we can kick off a public narrative & mitigation plans [redacted]	Re-engage with [redacted] on custom solutions, launch dev & user strategies (next slide)
GR / Legal	**Redacted - Privilege**	
PR	PR narrative out of our control post leak	Continue to engage reactively

Google

Redacted - Privilege

IN: Low ARPUs and local market dynamics yielding headwinds

Context: IN Apps annual spend [redacted] and [redacted]

Workstreams	On track for positive / neutral launch?	Post launch focus?
Partners (incl. Carriers & News)	Mostly negative, some neutral feedback [redacted]	Deploy local velocity incentives; continue engaging with partners and local programs to accelerate app growth (next slide)
GR / Legal	**Redacted - Privilege**	Next slide
PR	Ready to brief and engage reactively	Aligning on messaging, will likely be reactive.

Google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Google

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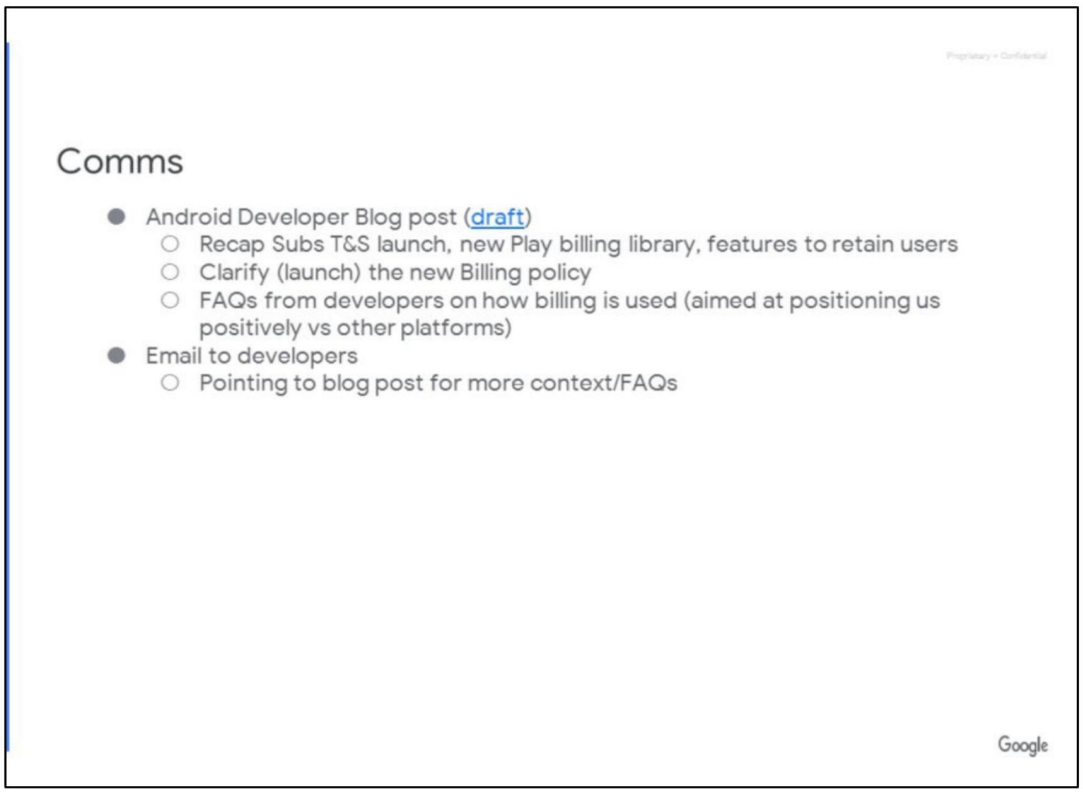
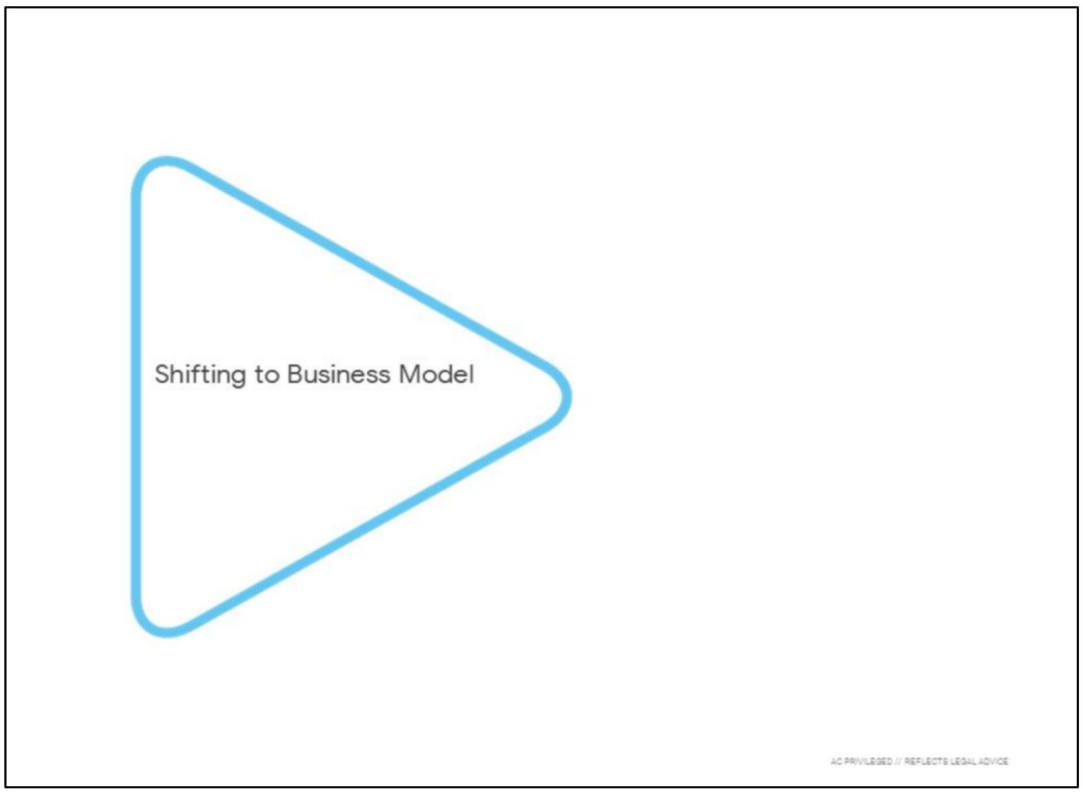
1	08/27/2020 04:19:49	**Redacted - Privilege**



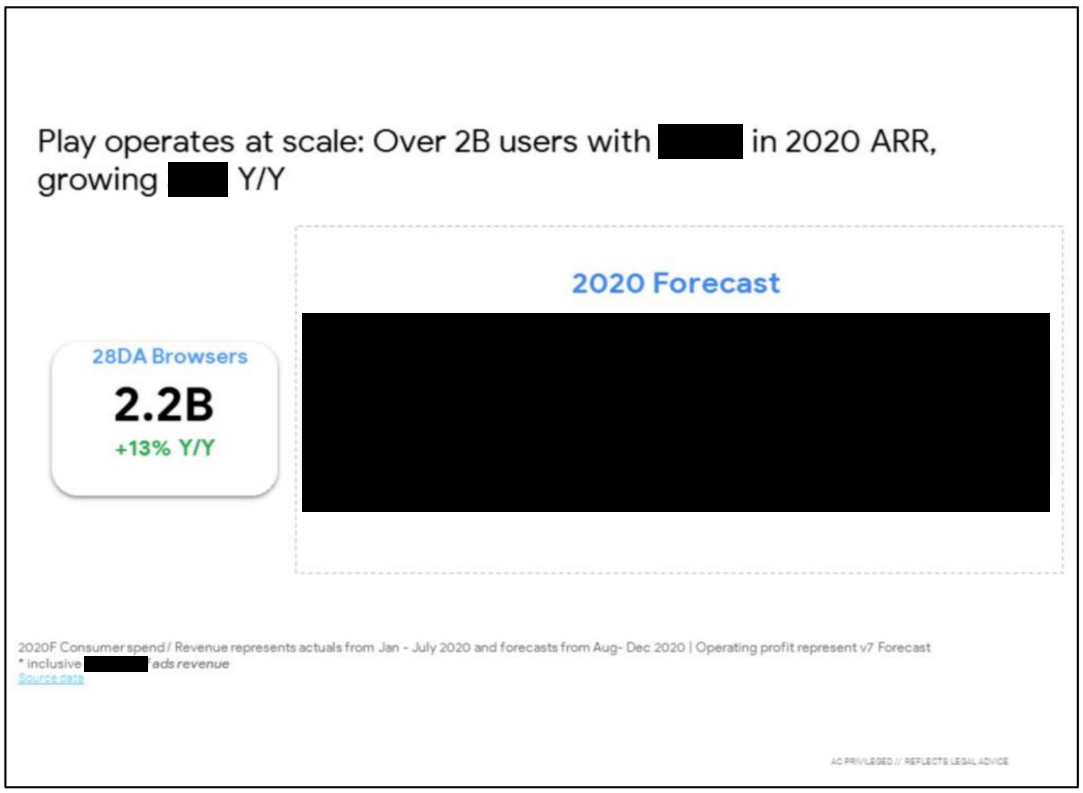
New blog proposal: https://docs.google.com/document/d/1r4HrDZQPiHSDLrvErx3Ke-t5JOSNk25GRTY8kVrKpdU/edit

Email and notifications: https://docs.google.com/document/d/19N36dzKbvTWttR3CQlaoFJbeDulEt1Nb9TmihP6pBtg/edit?ts=5f1917a4#

PR comm doc: https://docs.google.com/document/d/1v0C2z0O5mwW3NSEEOFBb0PDfxkUTj98h01omtZ9N5L8/edit


Shifting to Business Model
AC PRIVILEGED // REFLECTS LEGAL ADVICE

Contents


Play operates at scale: Over 2B users with [redacted] in 2020 ARR, growing [redacted] Y/Y
2020 Forecast
[redacted]
28DA Browsers
2.2B
+13% Y/Y
2020F Consumer spend / Revenue represents actuals from Jan - July 2020 and forecasts from Aug- Dec 2020 | Operating profit represent v7 Forecast
* inclusive [redacted] ads revenue
Source data
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Notes on Non-financial metrics definition, data limitations and extrapolation assumptions

"Apps w. GPB" : Monetized apps with spend > $0 for H1'20 at app package level.

Ads Rev: Ads on Play revenue

# of Apps: # of app package

App Usage: data is only available for [redacted] apps and games but should cover most of app usage since it's top heavy.

The data is sourced from lockbox (sample of ~60% Android users) and extrapolated.

Installs: includes pre-installs. Pre-installs are the apps that come pre installed on a device and are counted when new devices are activated.

Besides GPB Rev and Ads Rev split, all H1'20 Metrics exclude apps that are inactive as of 08/20. Apps may monetize during H1'20 but became inactive since then.

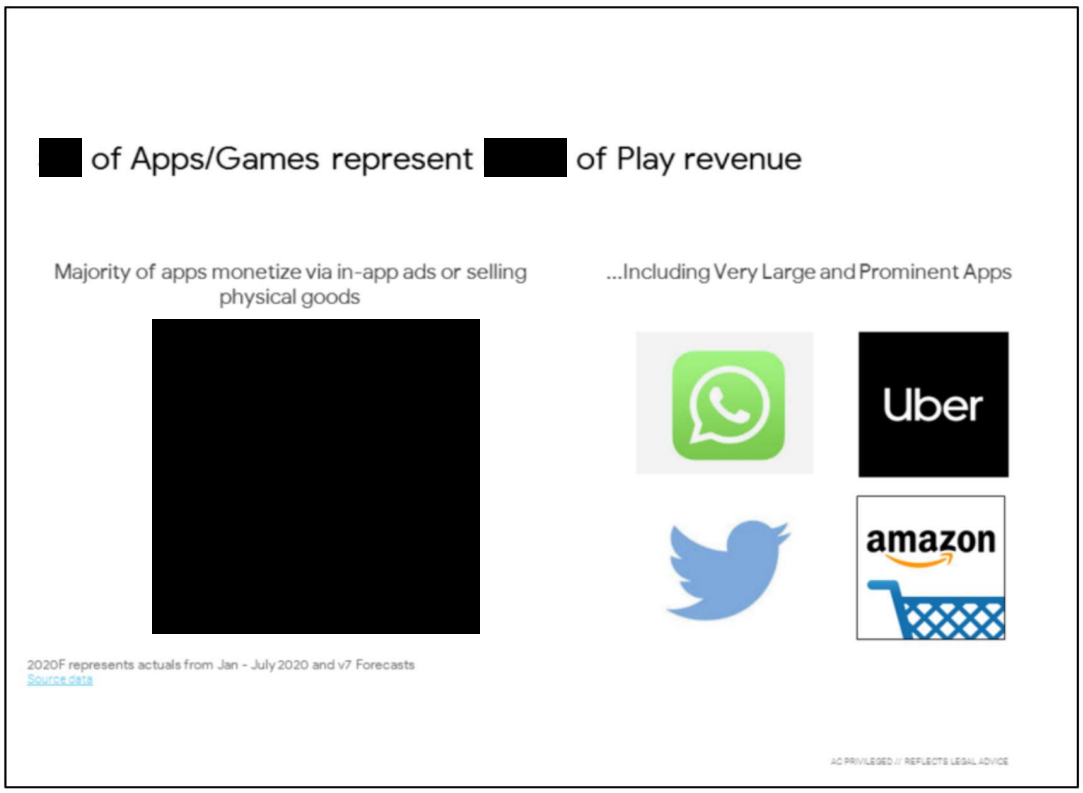
All metrics excluding Google 1P apps.

Notes on individual app usage and install:

some apps with high levels of installs and usage, such as [redacted]

[redacted]

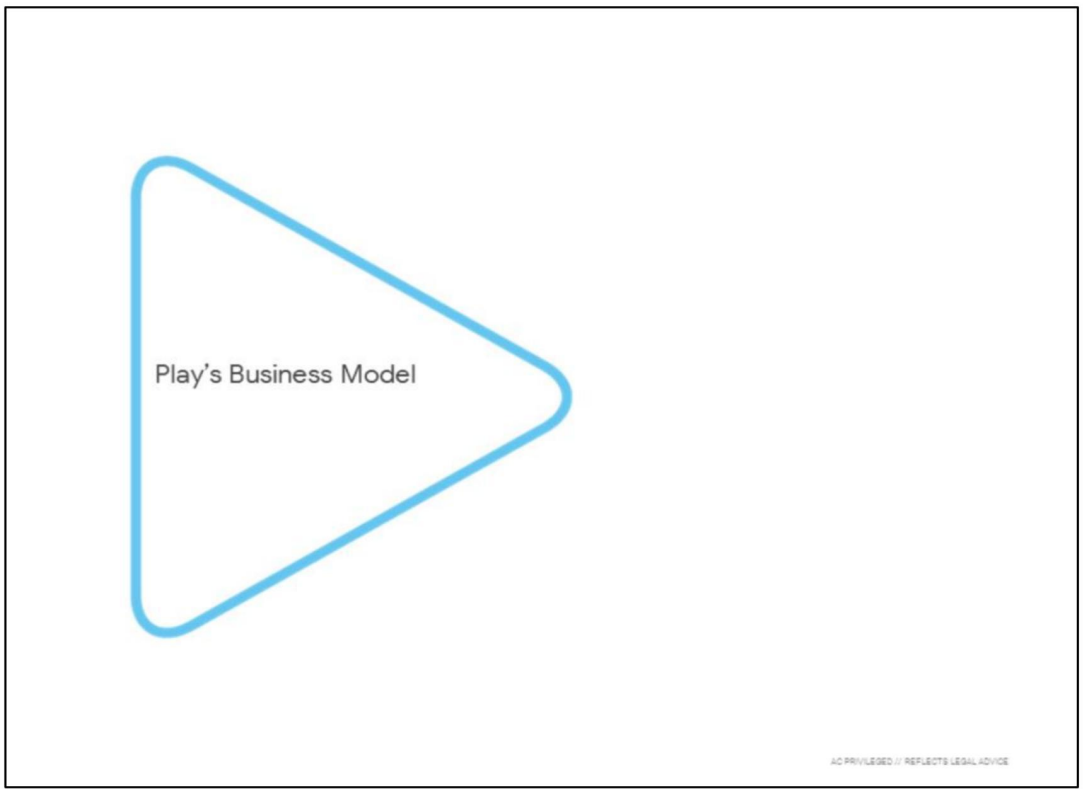
[redacted]

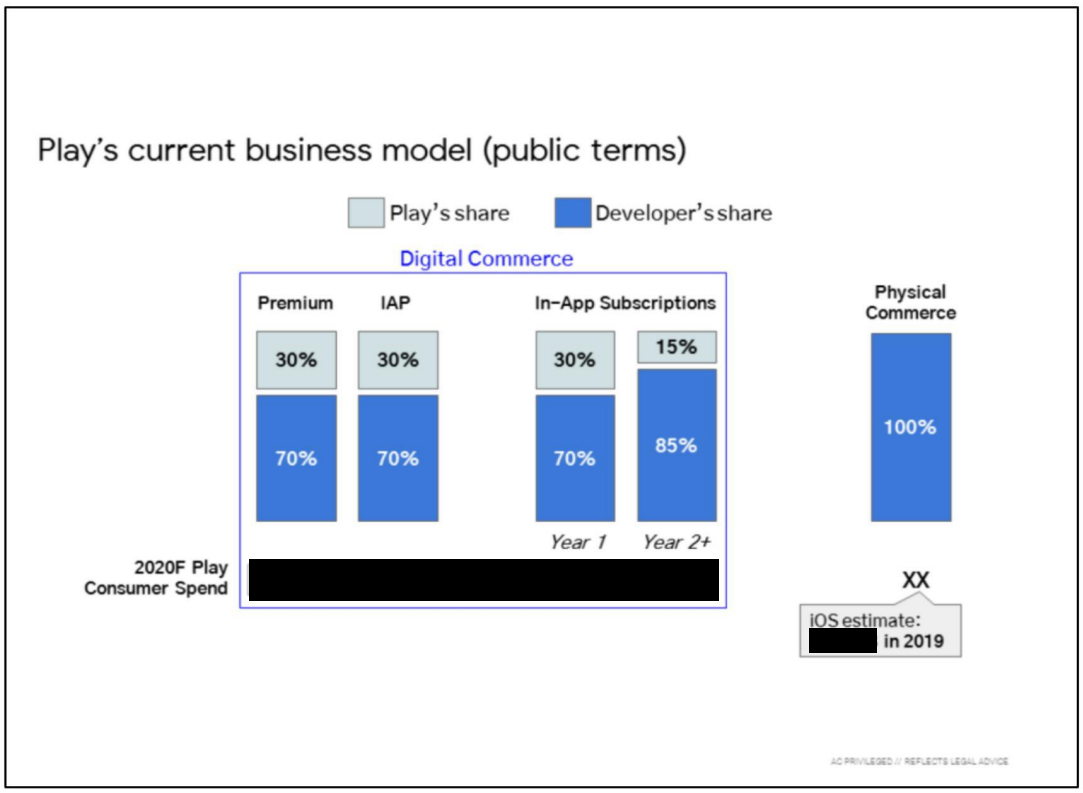


Some
some apps with high levels of installs and usage, such as [redacted] are in the "Apps w. GPB" segment because they had some spend in H1'20 even though it was minimal.

[redacted]

Segment definition
"Apps w. GPB" : Monetized apps with spend > $0 for H1'20 at app package level.


Play's Business Model


Play's current business model (public terms)
Play's share
Developer's share
Digital Commerce
Premium
IAP
In-App Subscriptions
30%
30%
30%
15%
70%
70%
70%
85%
Year 1
Year 2+
2020F Play Consumer Spend
[redacted]
Physical Commerce
100%
XX
iOS estimate: [redacted] in 2019
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In addition, Play has six commercial programs to address developer needs and economics in a targeted manner

Category *(qualifying developers only)*		Commercial Program	Play Revenue Share	Program Rationale	Qualifying Dev #	Qualifying Dev Spend, as % of total Play Spend
Games	Top Managed	Games Velocity Program	[redacted]	- Ensure major game titles launch on Play - Ease Play revenue share agitation - Deepen x-Google relationships	21	[redacted]
Apps	Top Managed	Apps Velocity Program	[redacted]	- Boost x-PA value delivered - Boost integration with Play Billing	20	
	LiveTV	LRAP++	[redacted]	- Boost integration w/ Android / Google TV - Accommodate constrained dev margins	10	
	Video *(SVOD)*	LRAP	15%		55	
	Music	ADAP	15%	- Boost integration w/ Auto, Wear, TV, & Cast - Accommodate constrained dev margins	11	
	News	Subscribe w/ Google	15%	Part of Google News Initiative (GNI)	300	
				Total:	*~400*	

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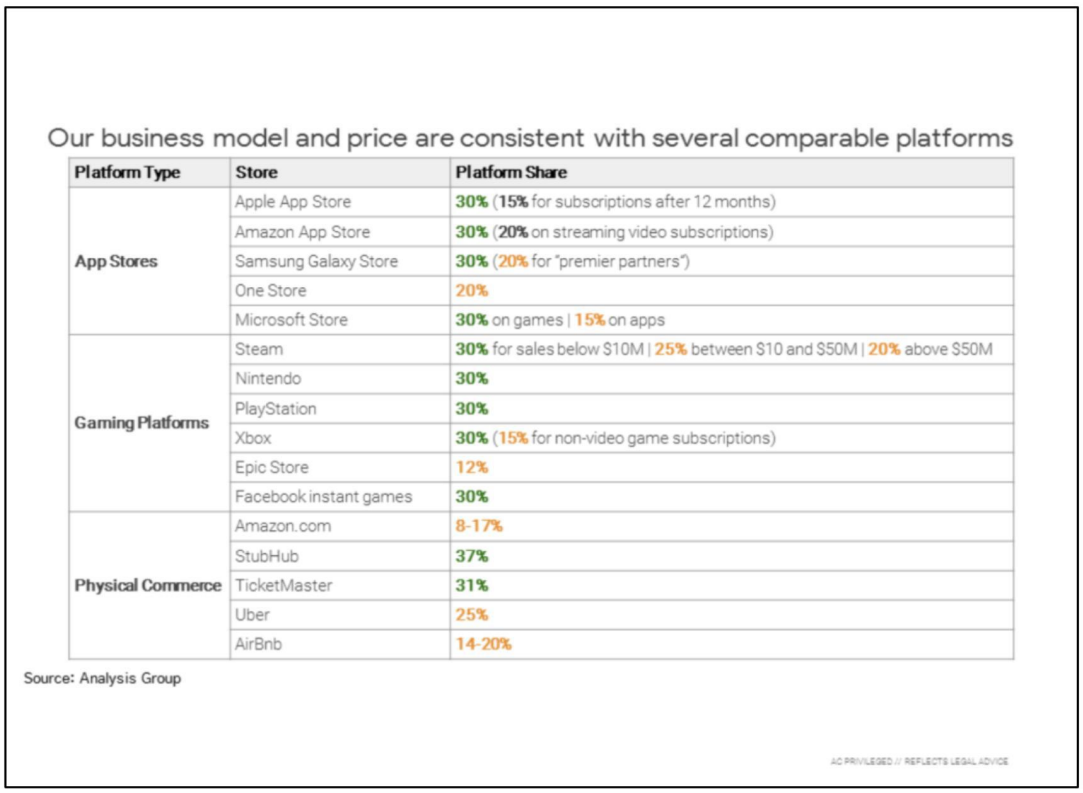

Our business model and price are consistent with several comparable platforms

Platform Type	Store	Platform Share
App Stores	Apple App Store	30% (15% for subscriptions after 12 months)
	Amazon App Store	30% (20% on streaming video subscriptions)
	Samsung Galaxy Store	30% (20% for "premier partners")
	One Store	20%
	Microsoft Store	30% on games | 15% on apps
Gaming Platforms	Steam	30% for sales below $10M | 25% between $10 and $50M | 20% above $50M
	Nintendo	30%
	PlayStation	30%
	Xbox	30% (15% for non-video game subscriptions)
	Epic Store	12%
	Facebook instant games	30%
Physical Commerce	Amazon.com	8-17%
	StubHub	37%
	TicketMaster	31%
	Uber	25%
	AirBnb	14-20%

Source: Analysis Group

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Tim

Pros and Cons of Play's current business model

Support for ···

- "Industry standard"
- Enables free to play model, which is good for consumers
- Aligns w/ devs – they earn, we earn
- Levels playing field – enables services for broad spectrum of devs
- Addresses margin-constrained devs via targeted commercial programs

Issues we hear ...

- 30% perceived as a big number
- Requires usage of Google's Billing system
- Potentially misaligned w/ value delivered in few cases:
  - Devs who retain paying users for long periods (e.g. [redacted])
  - Hyper-local devs who rely on few FOPs (e.g. [redacted] in Korea)
  - Large brands who don't rely as heavily on Play UA / discovery (e.g. Tinder)

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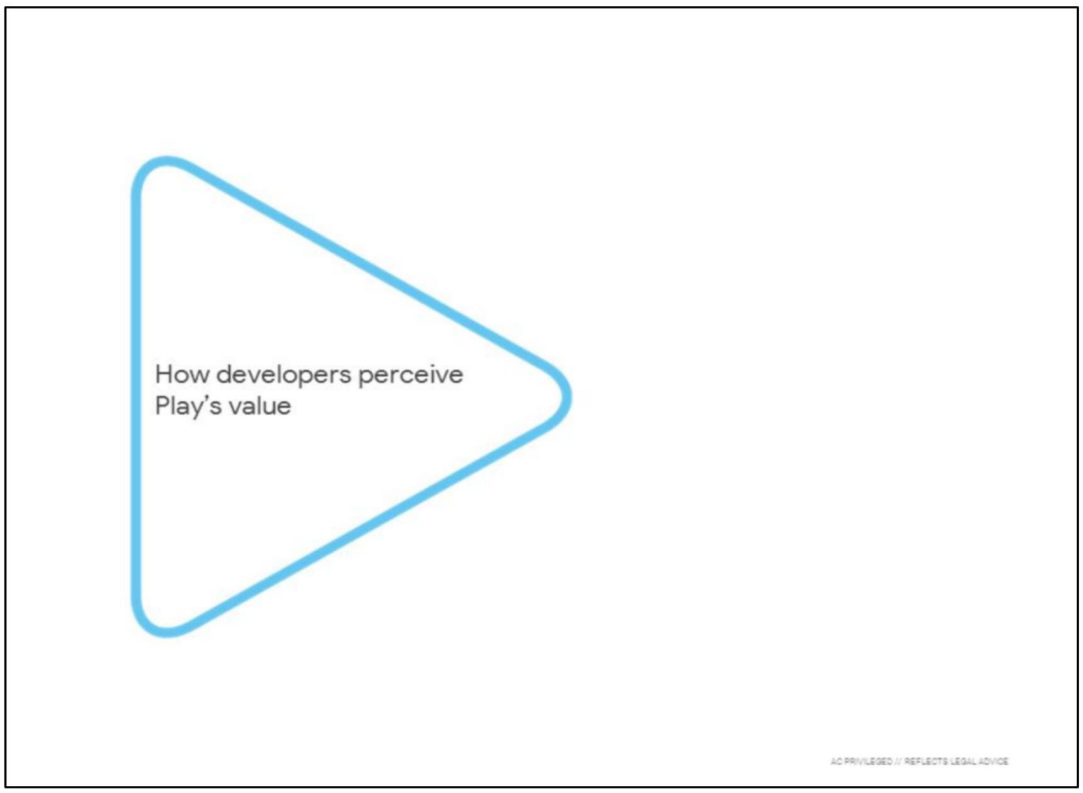
How developers perceive
Play's value
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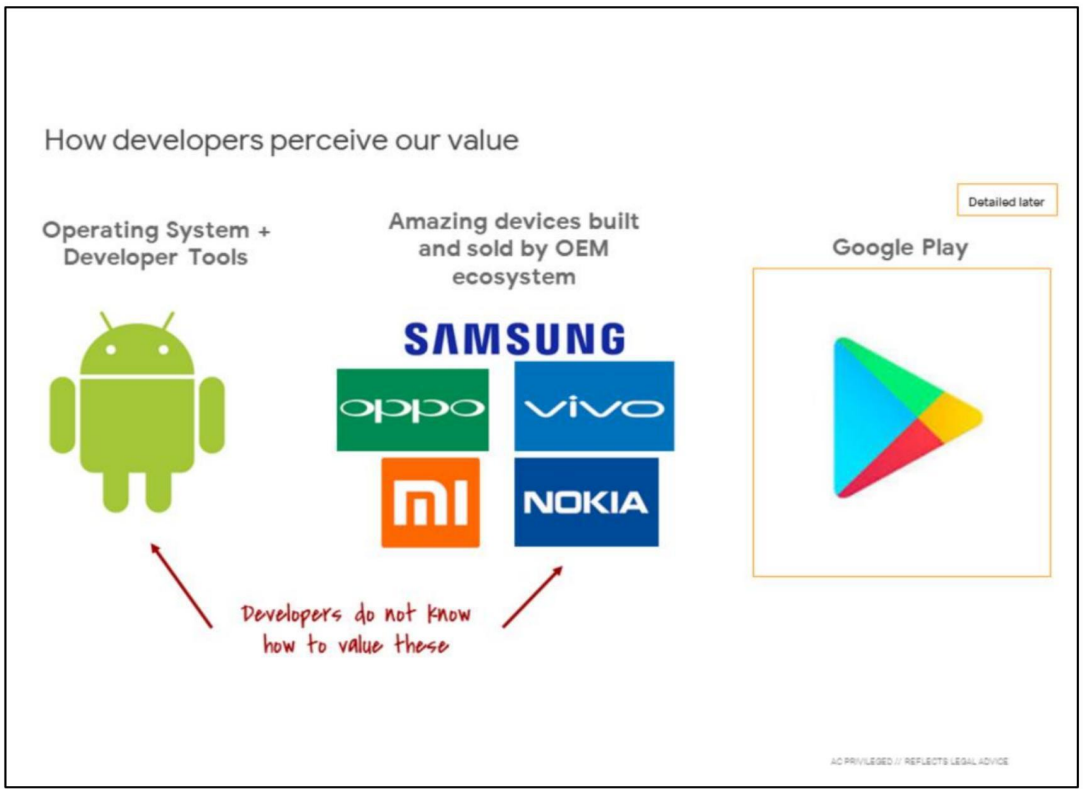
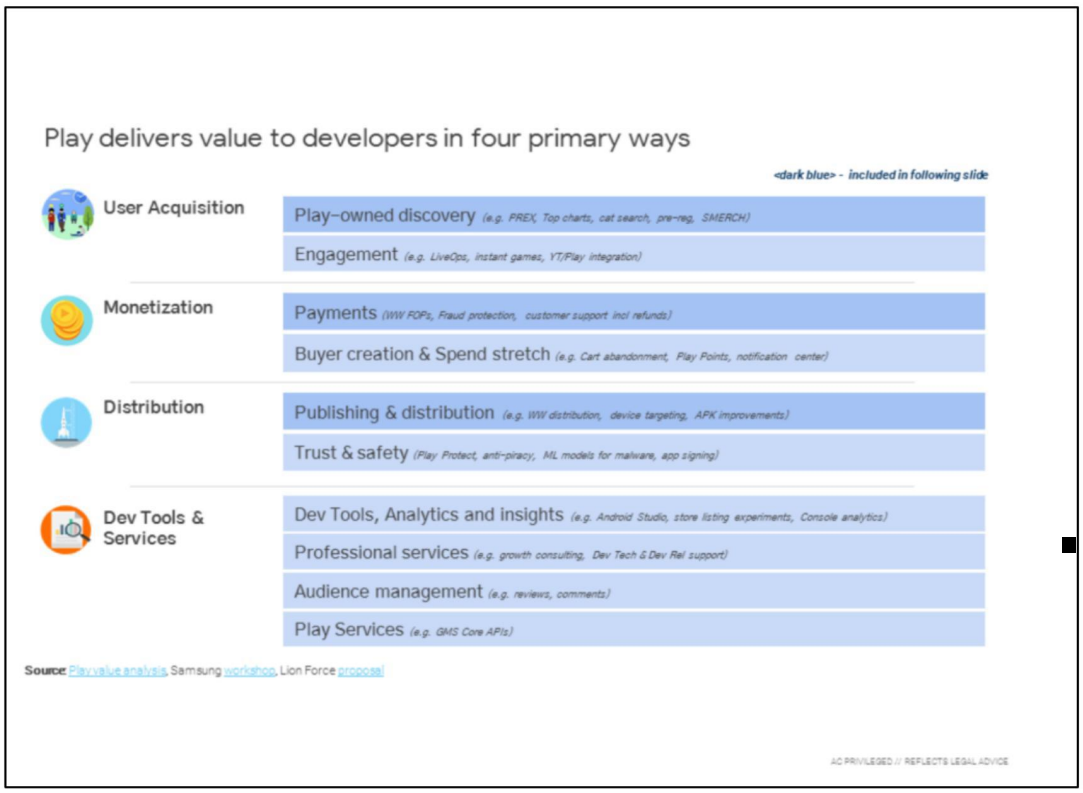

How developers perceive our value
Operating System + Developer Tools
Amazing devices built and sold by OEM ecosystem
Detailed later
Google Play
SAMSUNG
oppo
vivo
NOKIA
Developers do not know how to value these
AC PRIVILEGED // REFLECTS LEGAL ADVICE

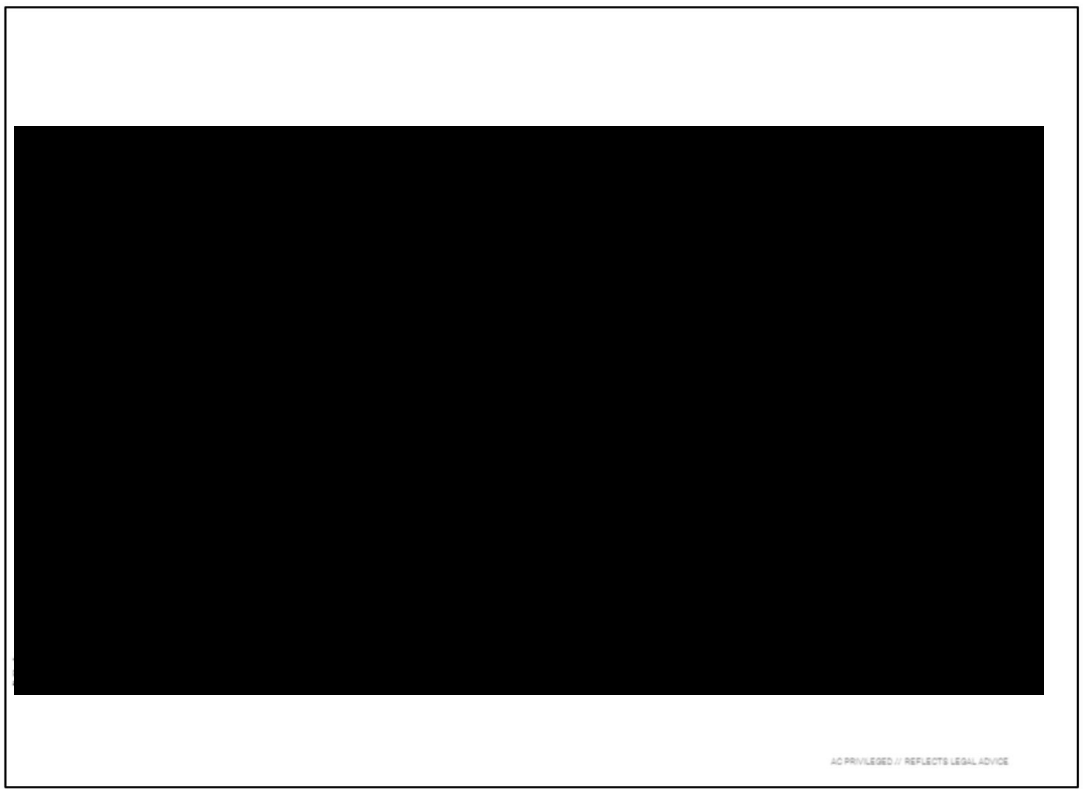


Play value to be discussed separately (led by Mike's team analysis and Ravi's teams analysis). Approximate calculations
Discovery value estimated by calculating: [redacted]
Estimated engagement value focused on liveops campaigns [redacted]
Estimated payments value using [redacted]
Buyer creation: [redacted]
Spend stretch: [redacted]
Delivery value: [redacted]
Growth consulting: [redacted]
consultations

Notes:
YT / Play integration (Supercell lootdrops after watching video)
Play owned discovery: [redacted] **is so much bigger than if they turn up Ads in the store. Potential rationale:**
Play is generating more value than what it is capturing (some long tail of devs wouldn't pay for the the value of what we are providing)
Growth consulting: [redacted] **consultations over the last 1.5 yrs,** [redacted] **year incremental consumer spend; Ads consulting also likely have same rough**

order of magnitude value
A/B testing: alternatives is Plum [redacted]

Additional value not depicted:
Custom store listings across Geo
Custom Ads based on user journey
Subscriptions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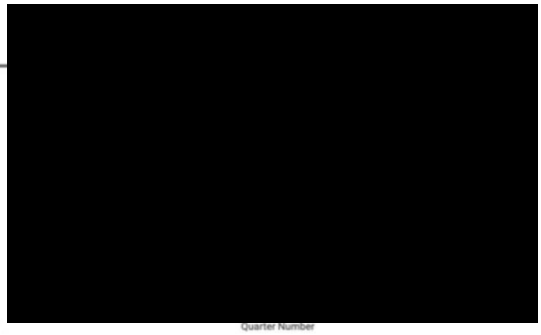
Play Value perceived varies during app/game lifecycle & by user characteristics

Perceived Play value:

- [redacted]
- Varies as dependence on new user discovery changes across titles & time
- [redacted]

Note: Play value estimates a surplus in value creation for games overall. Where gaps exist, [redacted] is among the top 30 game devs.



* Based on top 1000 games by 2018 consumer spend launched before 2018Q3
*Delivery Value is 1-2%, so removed labels to simplify graph

'Perceived Developer Value' (PDV) is a theoretical construct and not a precise value. PDVs are not complete in that they do not include the full set of customer revenue streams to developers, resources or investments required to build and maintain the products, nor do they include the complete set of products and services provided to developers. They are based on assumptions on the perceived value of Google services to a developer that may not be accurate. They are also built to guide specific decisions and are not appropriate for guiding investments outside of those specific scenarios (e.g., Google level investments, decisions for another product area)

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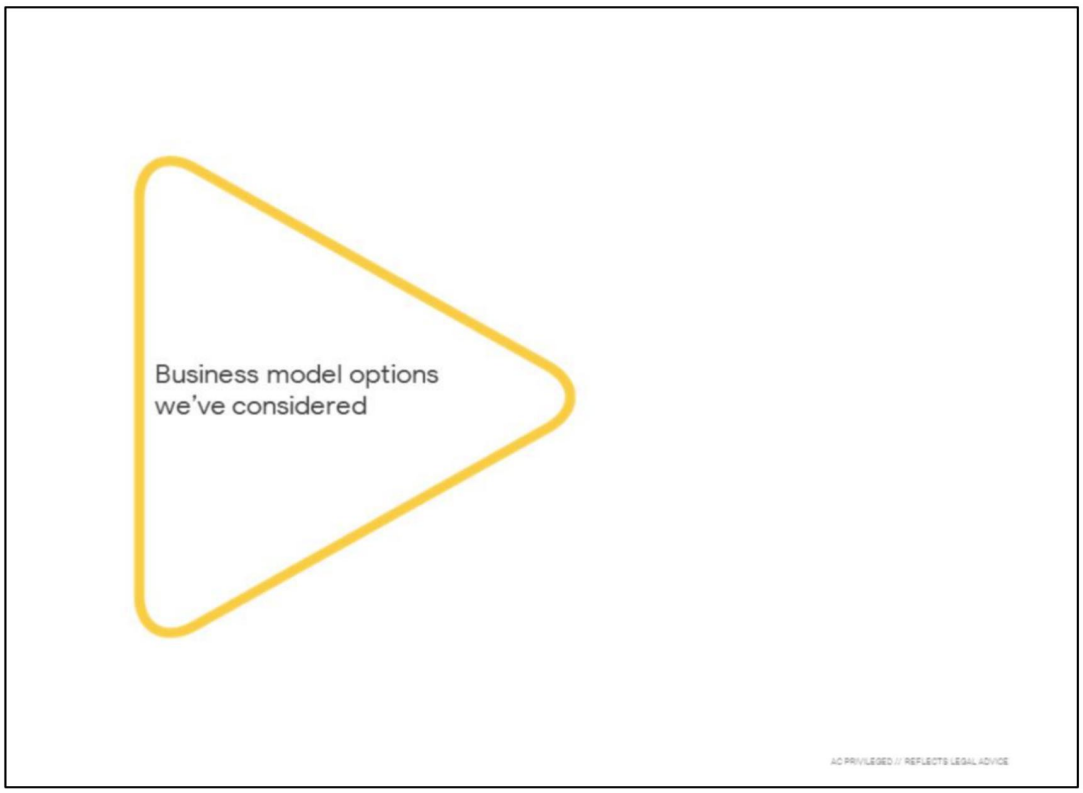
Business model options
we've considered
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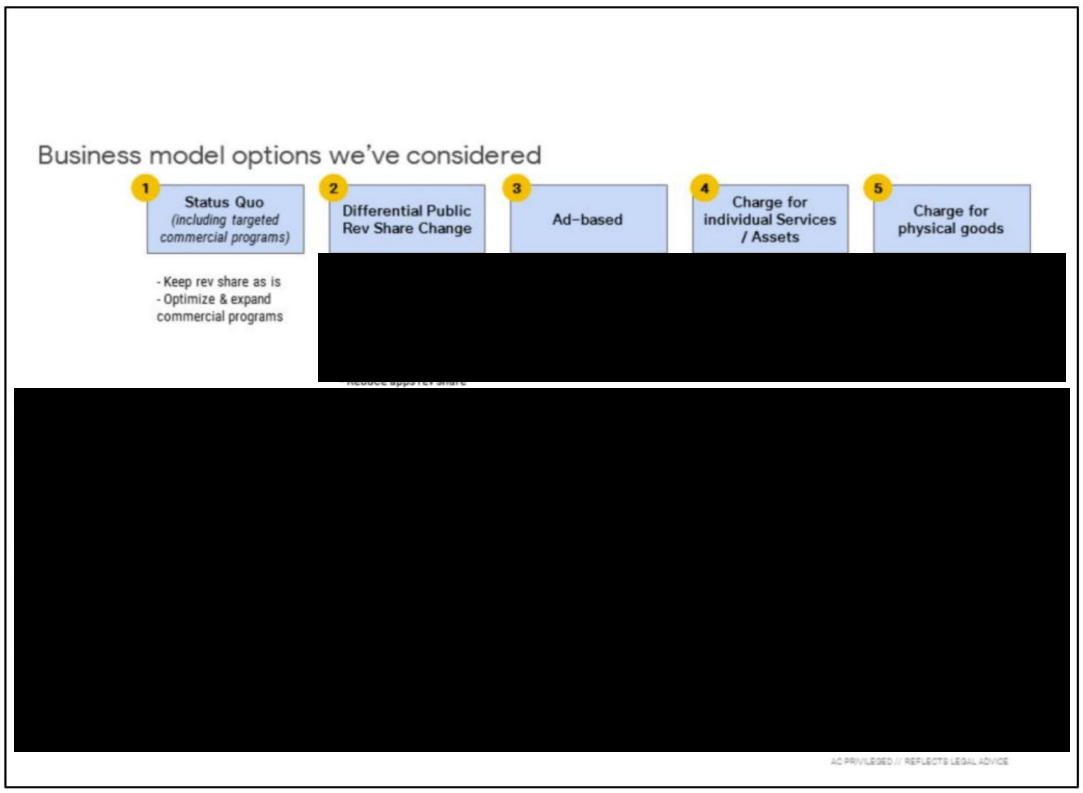
Business model options we've considered
1
Status Quo
(including targeted commercial programs)
2
Differential Public Rev Share Change
3
Ad-based
4
Charge for individual Services / Assets
5
Charge for physical goods
- Keep rev share as is
- Optimize & expand commercial programs
[redacted]
[redacted]
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Thought exercise: Rev share options previously evaluated

[redacted]

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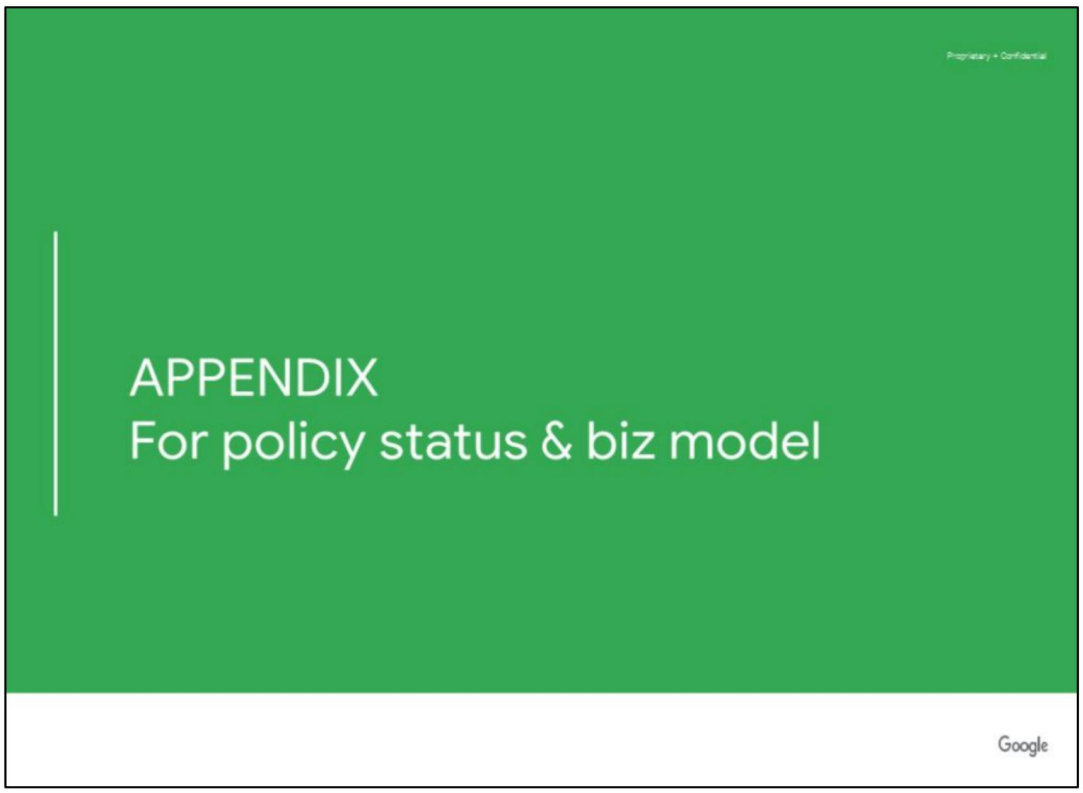
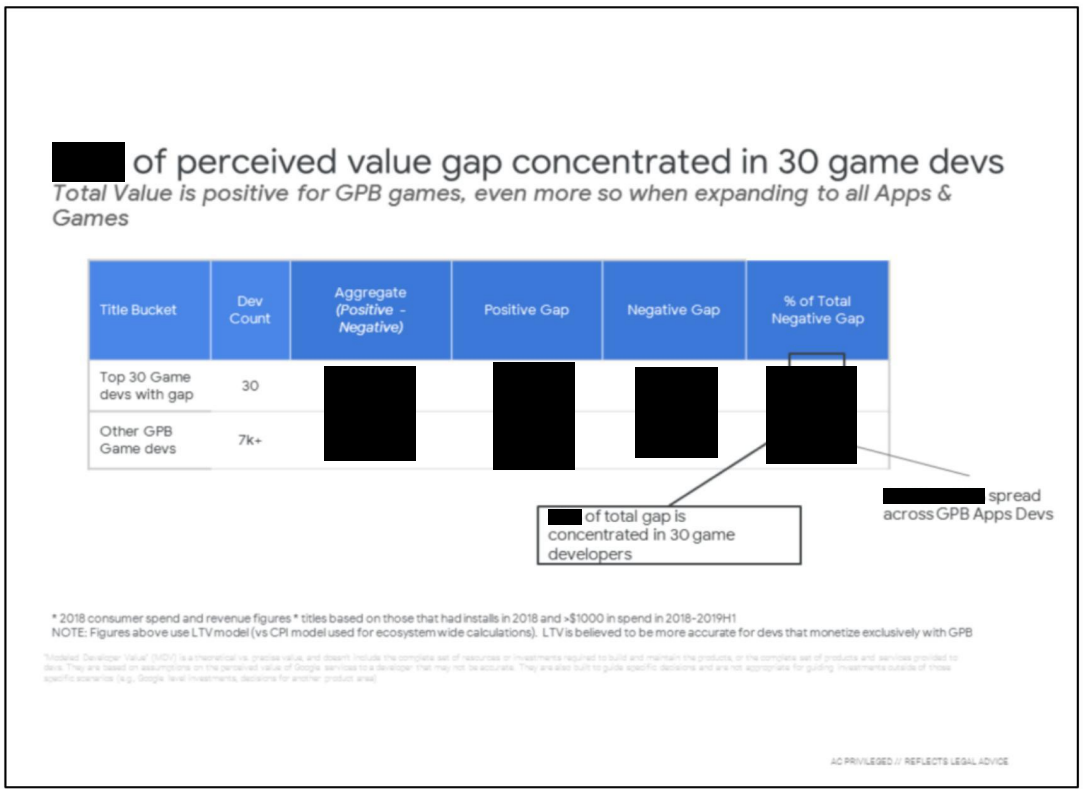

Proprietary + Confidential
APPENDIX
For policy status & biz model
Google


[redacted] of perceived value gap concentrated in 30 game devs
Total Value is positive for GPB games, even more so when expanding to all Apps & Games
Title Bucket
Dev Count
Aggregate (Positive - Negative)
Positive Gap
Negative Gap
% of Total Negative Gap
Top 30 Game devs with gap
30
Other GPB Game devs
7k+
[redacted] of total gap is concentrated in 30 game developers
[redacted] spread across GPB Apps Devs
* 2018 consumer spend and revenue figures * titles based on those that had installs in 2018 and >$1000 in spend in 2018-2019H1
NOTE: Figures above use LTV model (vs CPI model used for ecosystem wide calculations). LTV is believed to be more accurate for devs that monetize exclusively with GPB
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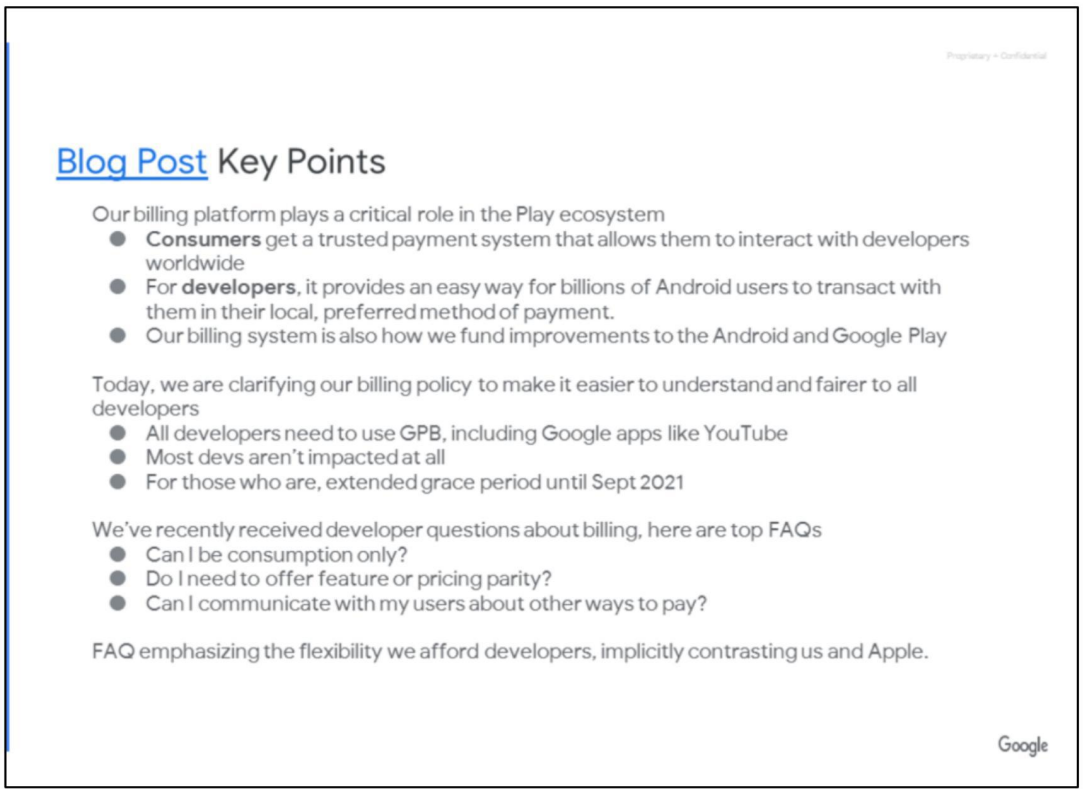
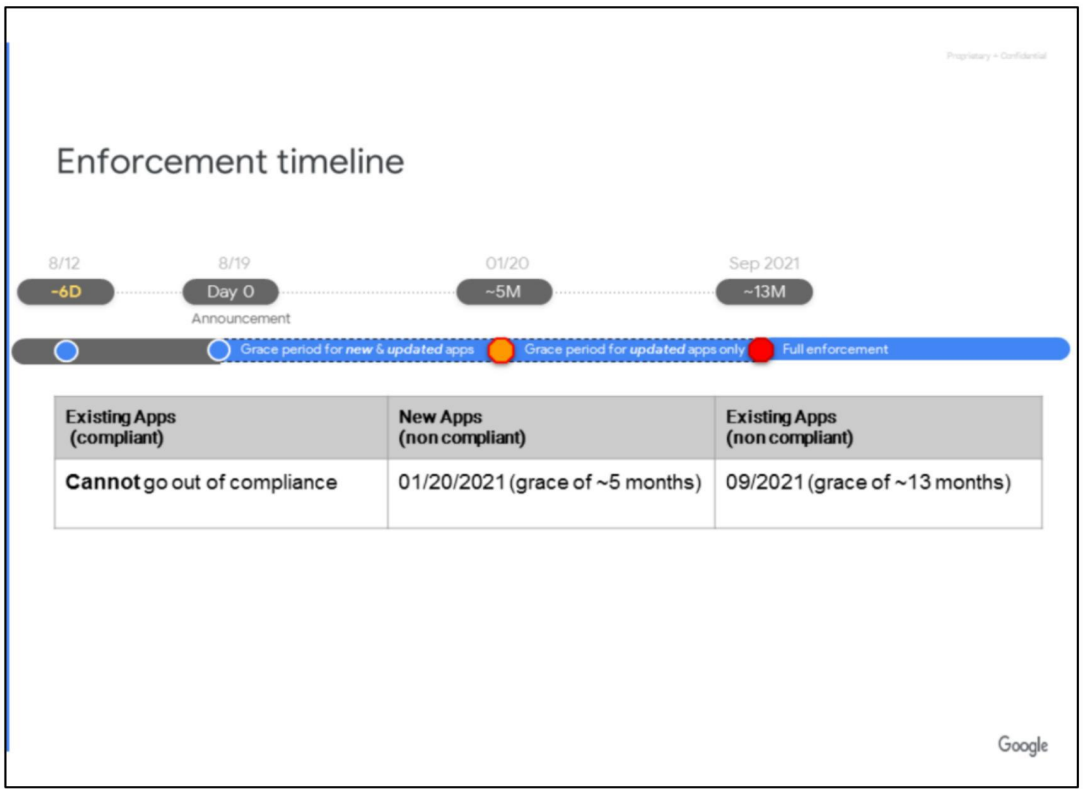


New blog proposal: https://docs.google.com/document/d/1r4HrDZQPiHSDLrvErx3Ke-t5JOSNk25GRTY8kVrKpdU/edit

Email and notifications: https://docs.google.com/document/d/19N36dzKbvTWttR3CQlaoFJbeDulEt1Nb9TmihP6pBtg/edit?ts=5f1917a4#

PR comm doc: https://docs.google.com/document/d/1v0C2z0O5mwW3NSEEOFBb0PDfxkUTj98h01omtZ9N5L8/edit



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PR comm doc: https://docs.google.com/document/d/1v0C2z0O5mwW3NSEEOFBb0PDfxkUTj98h01omtZ9N5L8/edit

Match - 11.30 am today

[redacted]

Match - 11.30 am today

[redacted]

Id	Date	Text
1	08/10/2020 23:09:32	@pfeng@google.com added this feel free to delete if not needed

Leading up to announcement

T-3
- **PR:** Scheduling "KR reporter roundtable"
- **BD/PR:** Match and [redacted] have a heads up on upcoming launch
- **GAPP:** Start scheduling briefings

T-2
- **BD/PR:** Heads up to [redacted]

T-1 - Press Briefings / Heads up for Devs and Regulators
- **PR:**
  - KR: Reporter roundtable (Purnima) -PM PST day before announce
  - US: Pre-briefs with key business, tech, and Android press
- **GAPP:** Briefings begin
- **BD:** Key partner briefings (last 24hr before launch)

Announcement Date (target: 8/19)
- Blog at 10 am PT
- Policy Center announcement of updated policy; GAMMA email to all developers

Google

New blog proposal: https://docs.google.com/document/d/1r4HrDZQPiHSDLrvErx3Ke-t5JOSNk25GRTY8kVrKpdU/edit

Email and notifications: https://docs.google.com/document/d/19N36dzKbvTWttR3CQlaoFJbeDulEt1Nb9TmihP6pBtg/edit?ts=5f1917a4#

PR comm doc: https://docs.google.com/document/d/1v0C2z0O5mwW3NSEEOFBb0PDfxkUTj98h01omtZ9N5L8/edit

Match - 11.30 am today

[redacted]

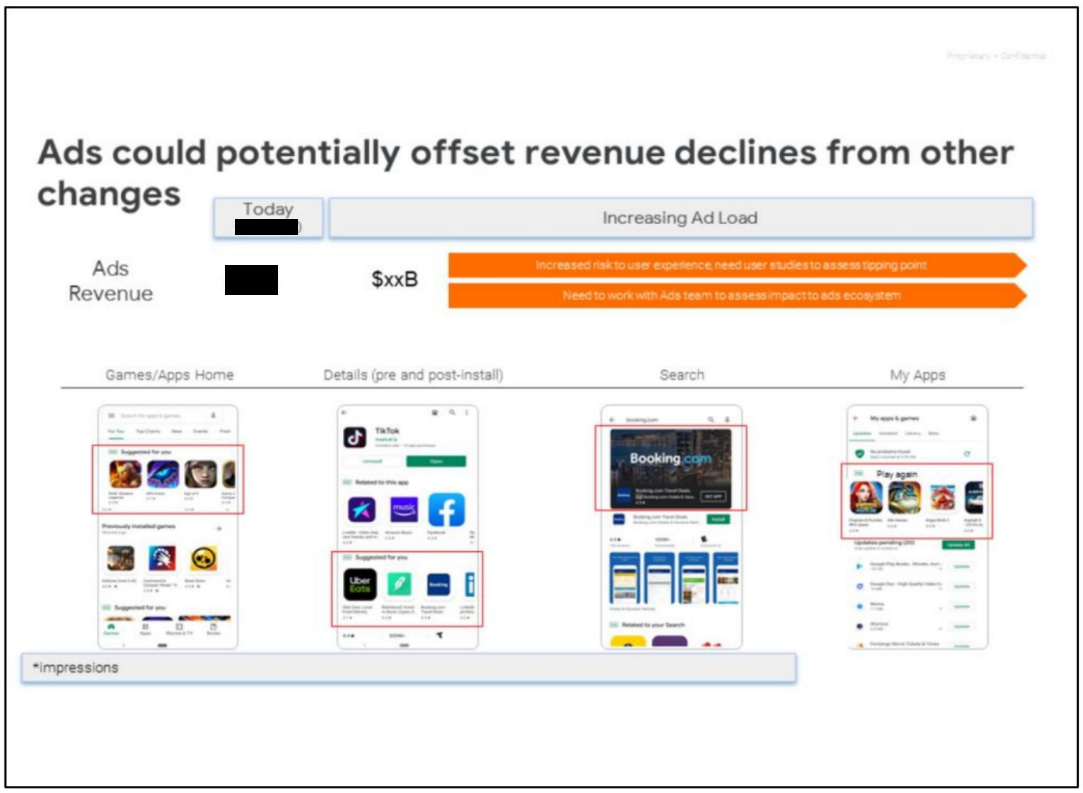
Match - 11.30 am today

[redacted]

Id	Date	Text
2	08/10/2020 23:12:33	@wilsonw@google.com FYI

We have a set of guiding principles for our business model (and commercial programs) **[DRAFT | For Discussion]**

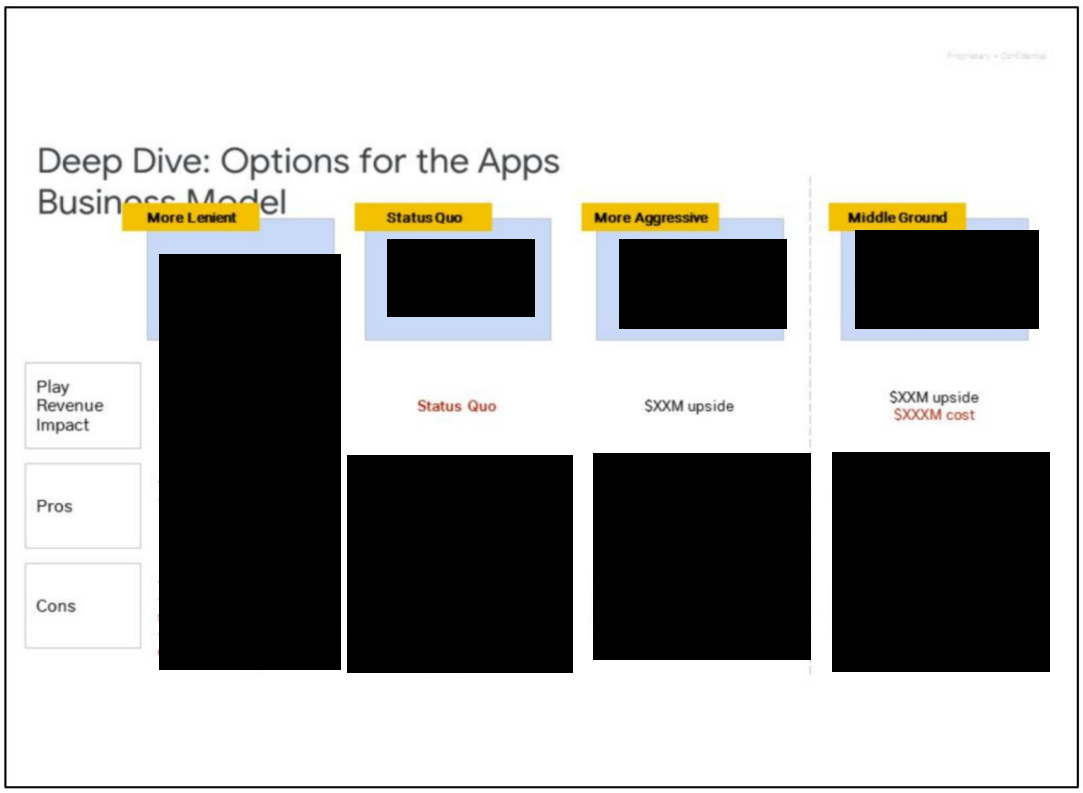
1. Value Delivered Play delivers value commensurate with our price
2. Aligned Incentives Developers are economically incentivized to build, grow, and innovate on Play
3. Equitable Play's terms create a level playing field; Play doesn't pick winners
4. Developer Profitability Developers of all types can build profitable businesses on Android
5. User Trust & Safety Users are provided a trusted and secure experience



Advertising opportunity is not limitless

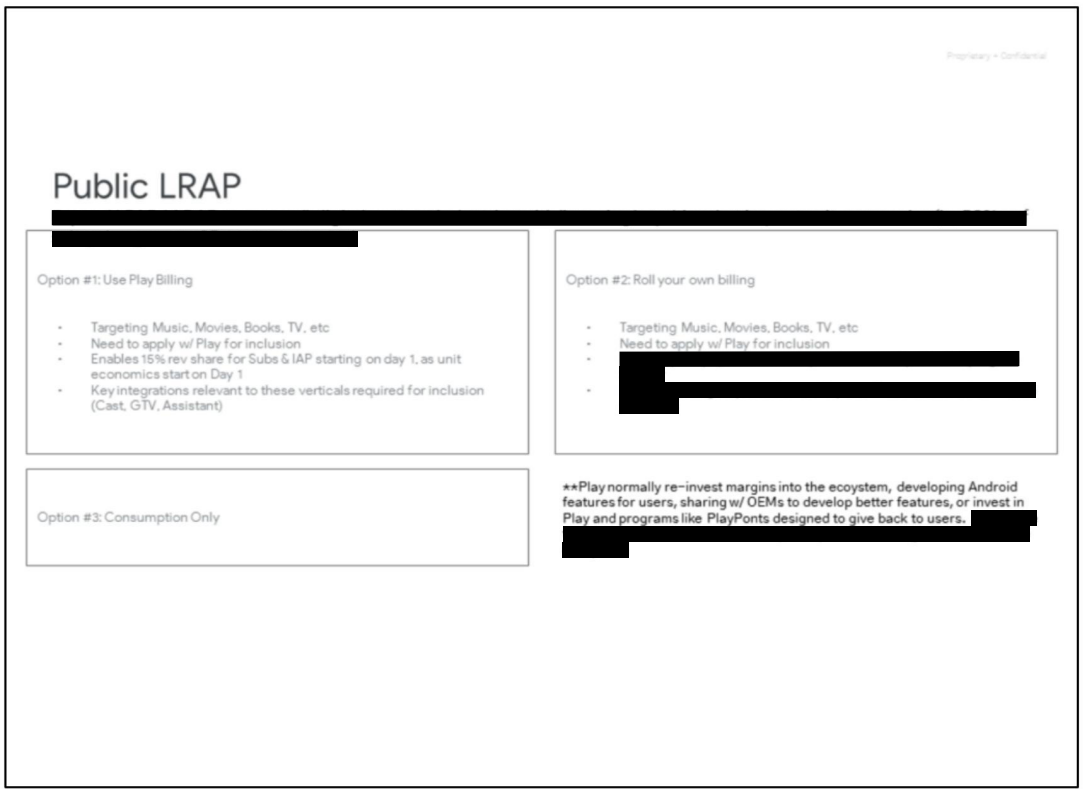
[redacted]

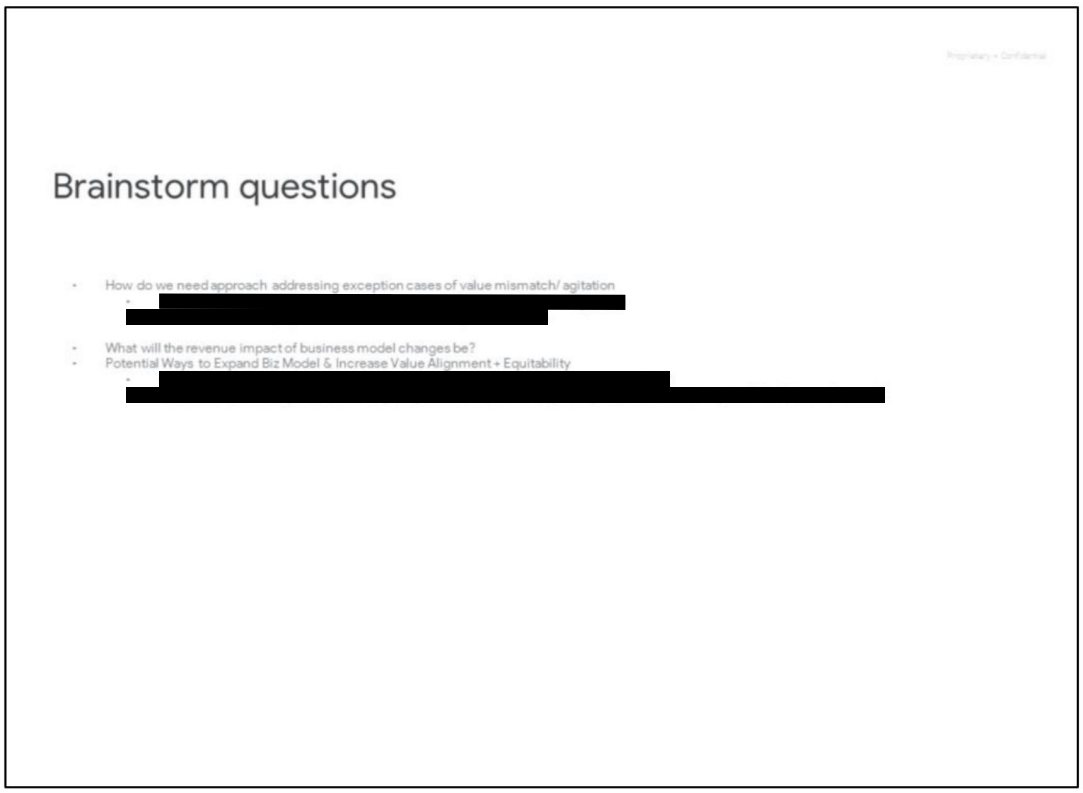
Also, land in range of other market precedent custom deals (e.g. Samsung exclusive offer to top devs)

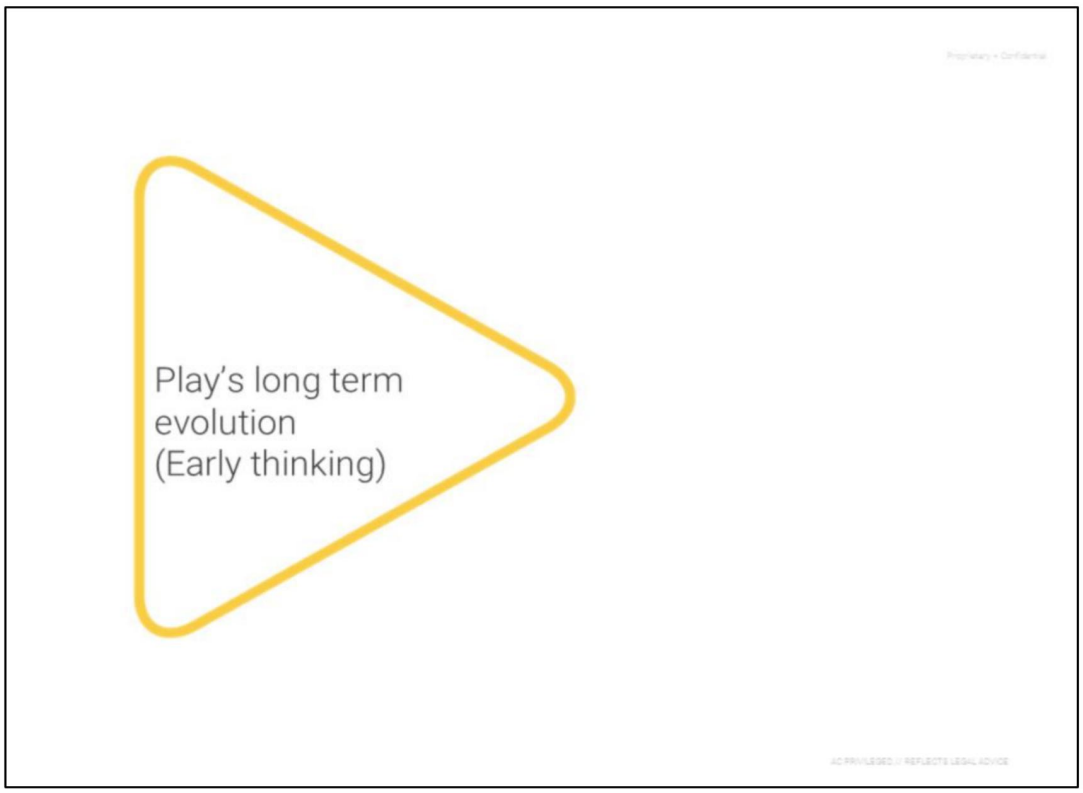

Deep Dive: Options for the Apps Business Model
More Lenient
Status Quo
More Aggressive
Middle Ground
Play Revenue Impact
Pros
Cons
Status Quo
$XXM upside
$XXM upside
$XXXM cost

Case study - Illustrative Only

	Aging Superstar: 5+ years, $Bs later	New Hit Game: Launched this month	Subs App: Known Brand + Targeted Use
Consumer Spend (last month)	[redacted]		
Monthly Active Users			
New Users from Play-owned channels (% of total MAU)			


Public LRAP
[redacted]
Option #1: Use Play Billing
Targeting Music, Movies, Books, TV, etc
Need to apply w/ Play for inclusion
Enables 15% rev share for Subs & IAP starting on day 1, as unit economics start on Day 1
Key integrations relevant to these verticals required for inclusion (Cast, GTV, Assistant)
Option #2: Roll your own billing
Targeting Music, Movies, Books, TV, etc
Need to apply w/ Play for inclusion
[redacted]
Option #3: Consumption Only
**Play normally re-invest margins into the ecoystem, developing Android features for users, sharing w/ OEMs to develop better features, or invest in Play and programs like PlayPonts designed to give back to users. [redacted]

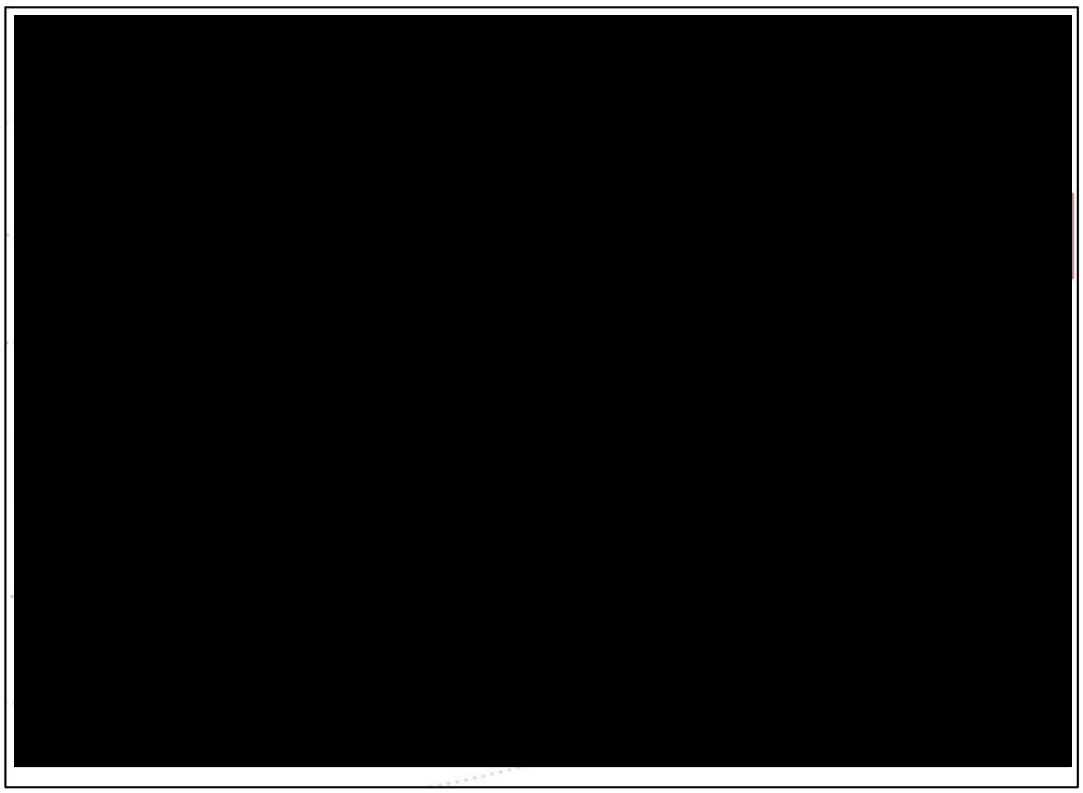

Brainstorm questions
How do we need approach addressing exception cases of value mismatch/ agitation
What will the revenue impact of business model changes be?
Potential Ways to Expand Biz Model & Increase Value Alignment + Equitability


Play's long term
evolution
(Early thinking)

Beyond digital-goods / games

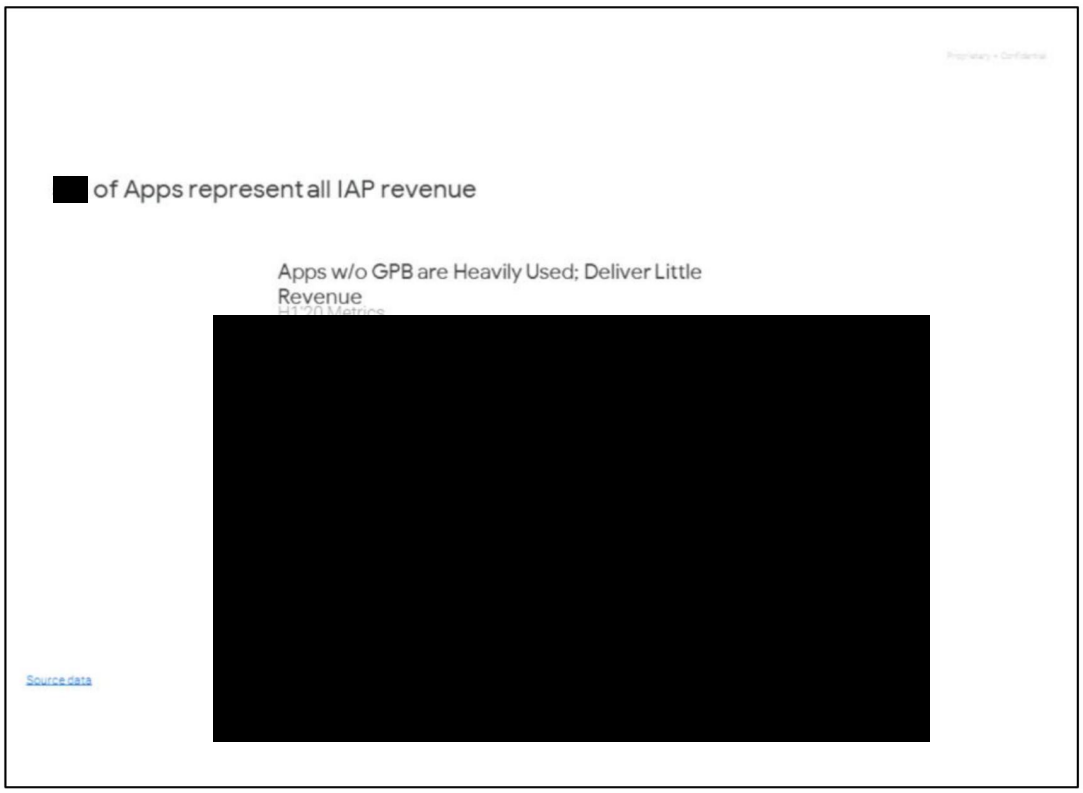
Four expansion vectors for Play to increase user relevance and secure long term growth

[redacted]




Play Value Model
Able to model 3 components:
Excludes value of Android platform, dev tools, Play Points, etc
Discovery
LTV-based
CPI-based
FOP
Delivery

Proposal: Unify and boost Google's value proposition to target developers, via expanded offers and service level



Notes on Non-financial metrics definition, data limitations and extrapolation assumptions

"Apps w. GPB" : Monetized apps with spend > $0 for H1'20 at app package level.

Ads Rev: Ads on Play revenue

# of Apps: # of app package

App Usage: data is only available for [redacted] apps and games but should cover most of app usage since it's top heavy.

The data is sourced from lockbox (sample of ~60% Android users) and extrapolated.

Installs: includes pre-installs. Pre-installs are the apps that come pre installed on a device and are counted when new devices are activated.

Besides GPB Rev and Ads Rev split, all H1'20 Metrics exclude apps that are inactive as of 08/20. Apps may monetize during H1'20 but became inactive since then.

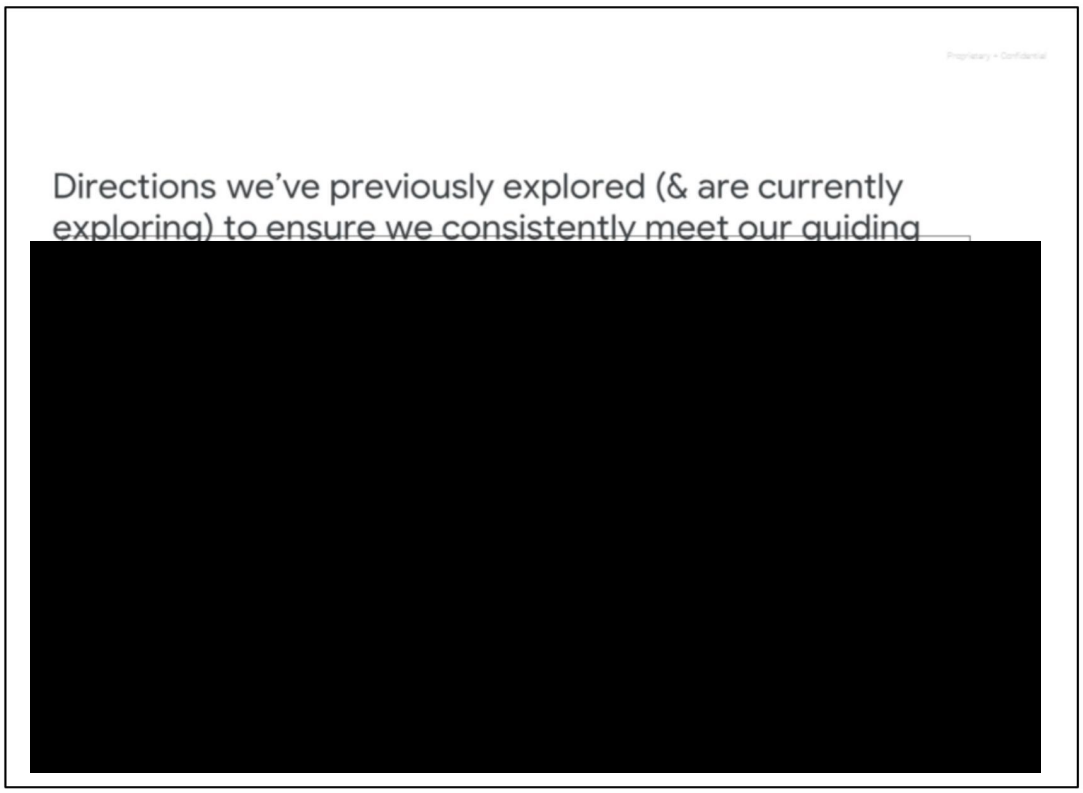
All metrics excluding Google 1P apps.

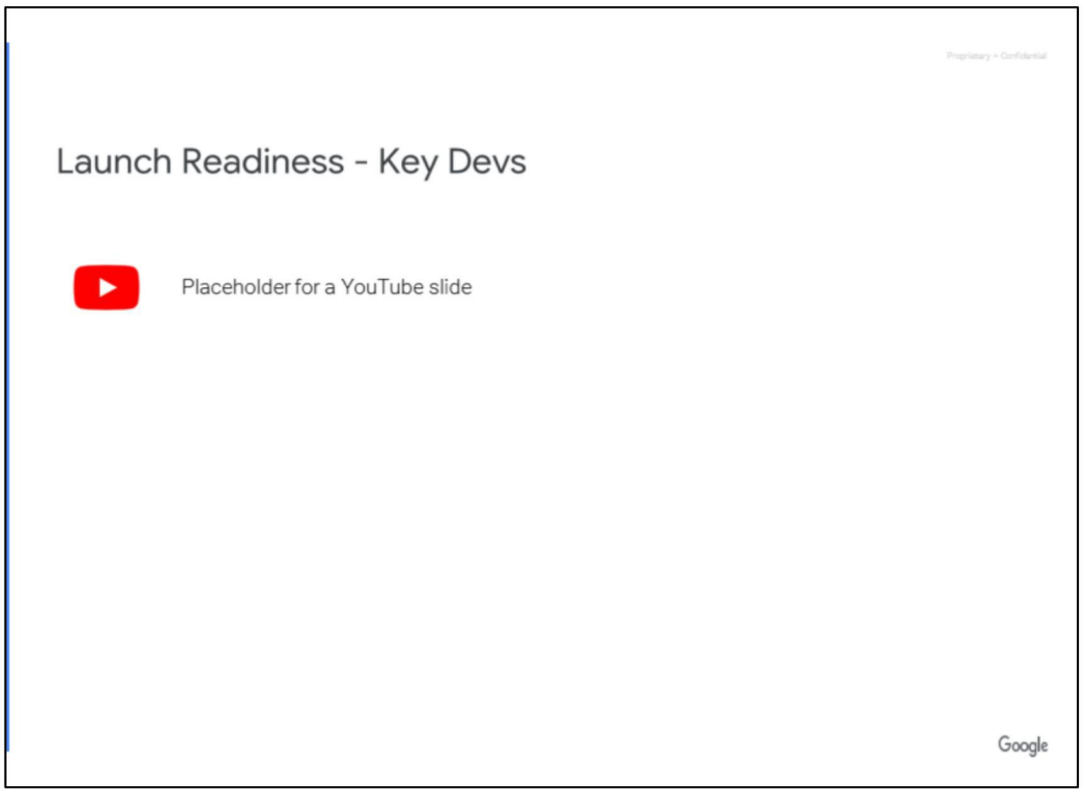
Notes on individual app usage and install:

some apps with high levels of installs and usage, such as [redacted]

[redacted] are in the "Apps w. GPB" segment because they had spend in H1'20.

[redacted]


Directions we've previously explored (& are currently
exploring) to ensure we consistently meet our guiding


Launch Readiness - Key Devs
Placeholder for a YouTube slide
Google


Redacted - Privilege
Google

Id	Date	Text
2	08/19/2020 17:20:13	Redacted - Privilege
1	08/19/2020 17:44:01	
3	08/19/2020 17:44:01	


Redacted - Privilege
Google

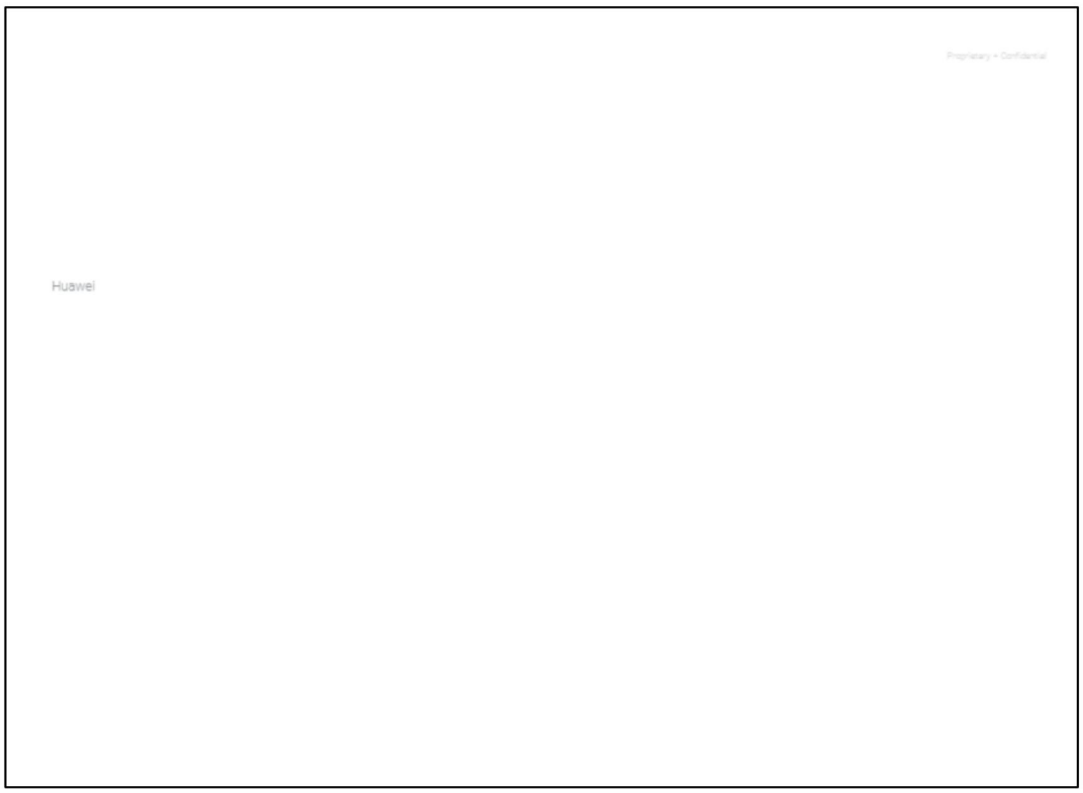
Id	Date	Text
2	08/19/2020 00:22:09	@shalinipoddar@google.com

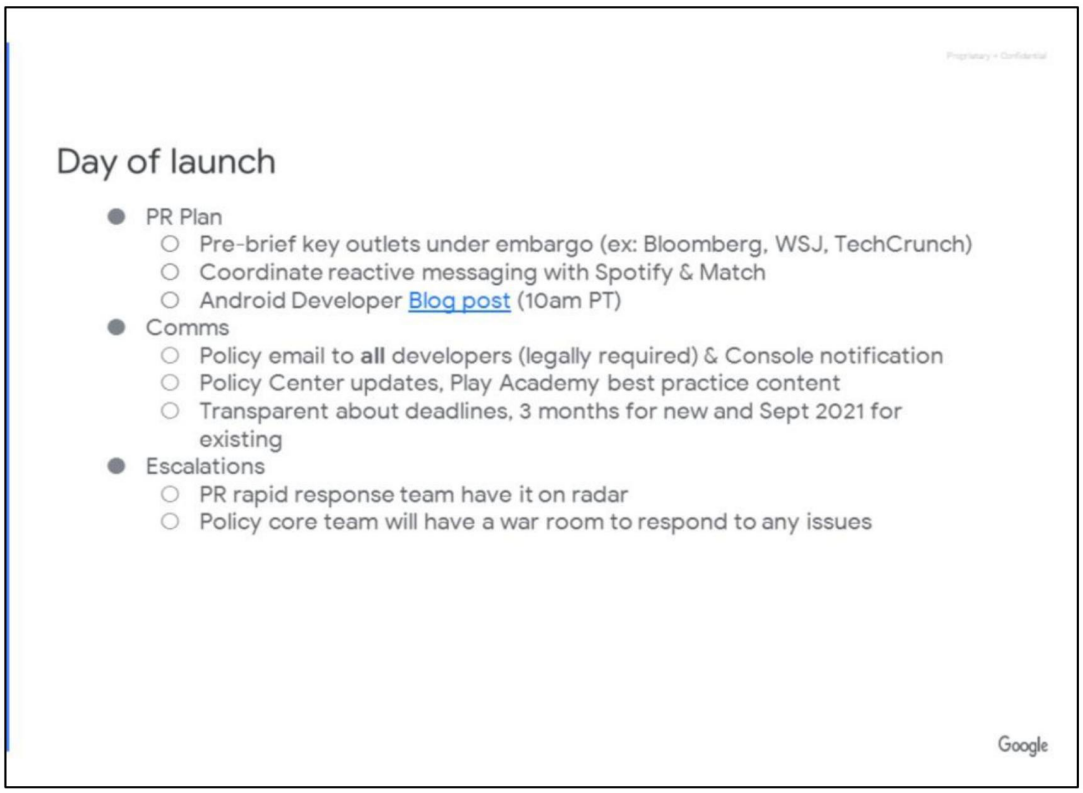
Regional launch readiness & post-launch focus (1/2)

Category	Audience	On track for positive / neutral launch?	Focus post launch
Key categories / Devs	Media & Music	Y	Assess LRAP / ADAP programs and any add'l needs
	AVP	Y	Continue pitches and iterate on Subs fund offering
	News	Y	Continue briefings and assess add'l programs as needed
	Carriers	Y, some partners concerned by re-engaging this week	Craft and roll out program to enable carve outs and address economics
	Books & Comics	Y (meeting with [redacted] tomorrow)	Assess need for rev share program, currently in AVP
	SMBs	Y (happy devs to engage), focusing on market specific program in IN	Assess feedback and readiness to act

Google


Proprietary + Confidential
FAQ
<all the reasons we should delay>
<all the tricky questions>
- Do you do deals with other devs?
- What about physical goods?
Google

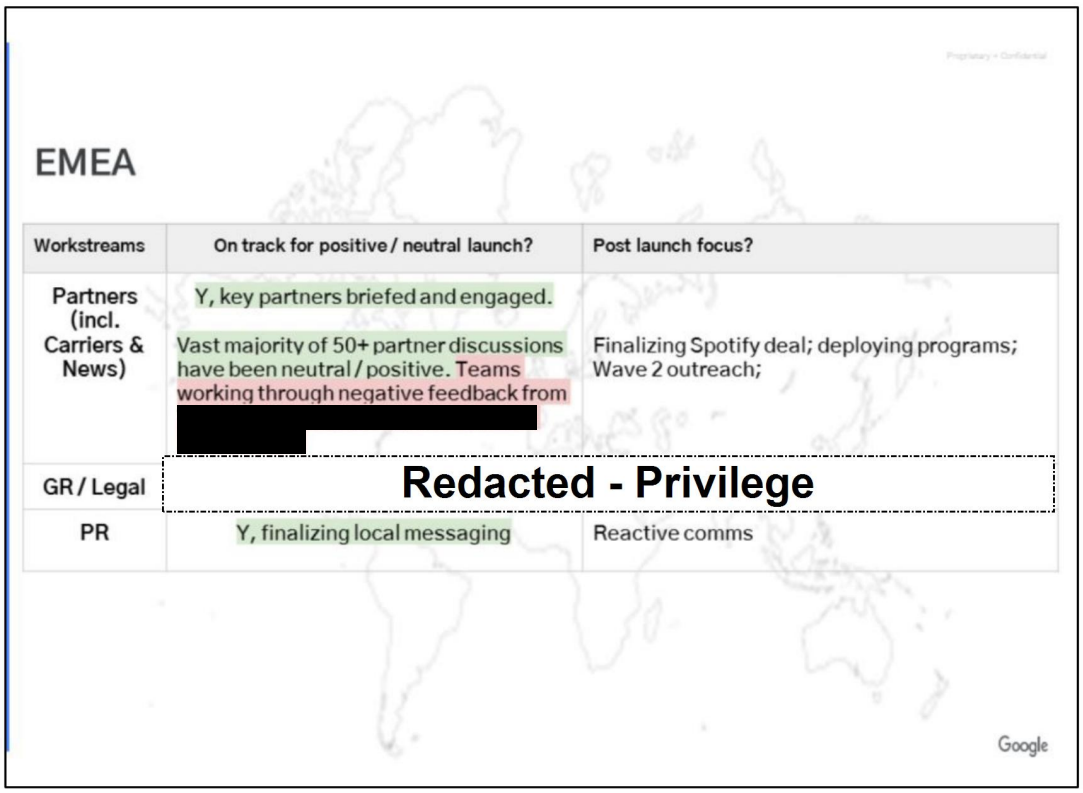

Huawei



New blog proposal: https://docs.google.com/document/d/1r4HrDZQPiHSDLrvErx3Ke-t5JOSNk25GRTY8kVrKpdU/edit

Email and notifications: https://docs.google.com/document/d/19N36dzKbvTWttR3CQlaoFJbeDulEt1Nb9TmihP6pBtg/edit?ts=5f1917a4#

PR comm doc: https://docs.google.com/document/d/1v0C2z0O5mwW3NSEEOFBb0PDfxkUTj98h01omtZ9N5L8/edit



EMEA

Workstreams	On track for positive / neutral launch?	Post launch focus?
Partners (incl. Carriers & News)	Y, key partners briefed and engaged. Vast majority of 50+ partner discussions have been neutral / positive. Teams working through negative feedback from [redacted]	Finalizing Spotify deal; deploying programs; Wave 2 outreach;
GR / Legal	**Redacted - Privilege**	
PR	Y, finalizing local messaging	Reactive comms

Google

RU

Workstreams	On track for positive / neutral launch?	Post launch focus?
Partners (incl. Carriers & News)	Y [redacted]	– Resolve feedback from [redacted] – Deploy programs – Telegram XFN engagement and action plan (GR assessing/advising)
GR / Legal	Redacted - Privilege	
PR		

Google

AU

Workstreams	On track for positive / neutral launch?	Post launch focus?
Partners (incl. Carriers & News)	Y Local team working on briefing News Corp Papers, [redacted] and Stan next week close to announcement	Wave 2 briefings, deploying programs
GR / Legal	**Redacted - Privilege**	
PR	Y	Aligning on messaging, will likely be reactive.

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Attorney Client Privileged and Confidential

FOP Coverage Proposal

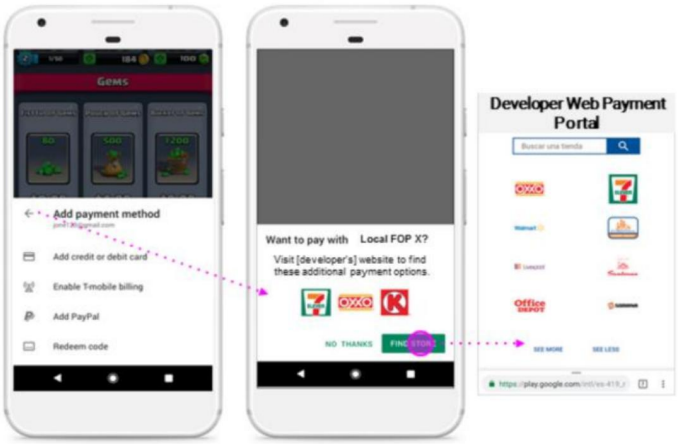
[redacted]

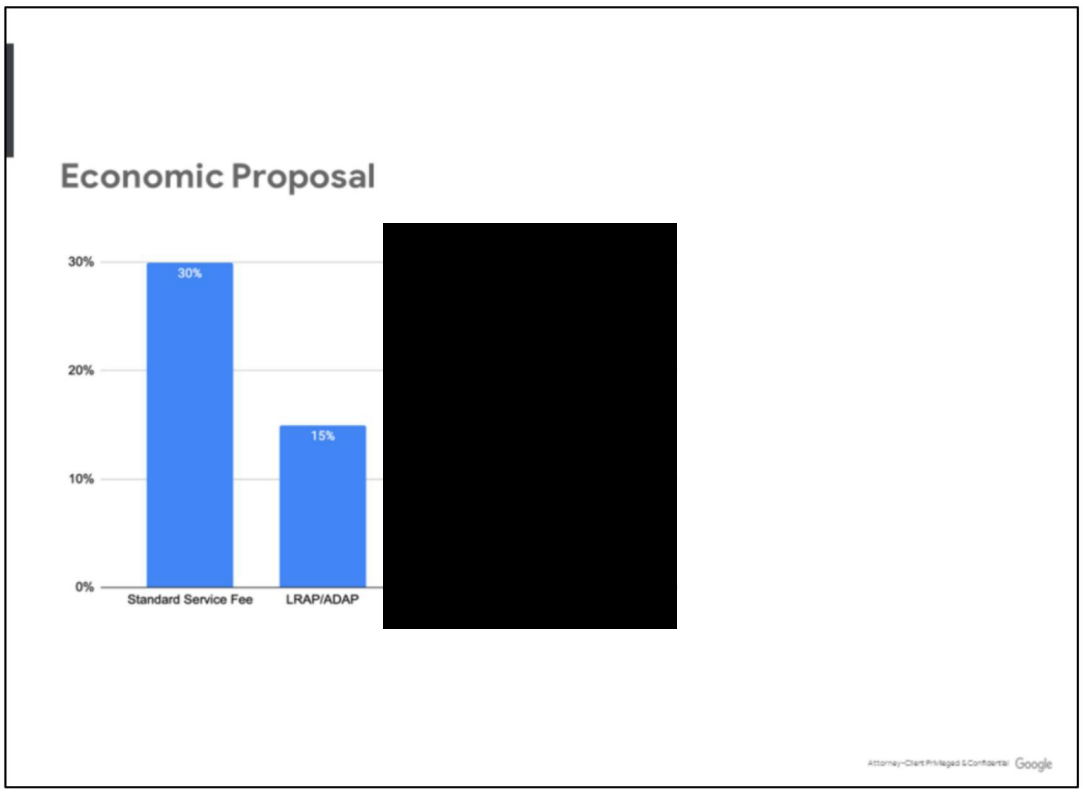
Exceptions granted by dev/country/FOP with clear eligibility criteria, exit criteria, and ops process to manage intake/execution/comms.

Can be messaged as an **EAP / pilot.**

VERY ILLUSTRATIVE EXAMPLE

Send to dev's web payment portal on cart abandon




Economic Proposal
30%
20%
10%
0%
30%
15%
Standard Service Fee
LRAP/ADAP
[redacted]
Attorney-Client Privileged & Confidential Google


ChangGoo program (reference)
ChangGoo program with [redacted] from Government, [redacted] marketing investment from Google)
80 selected devs, on average developers receiving direct funds [redacted], and other services like go global support package with more value
Solid outcome
Revenue increase of top 100 devs selected by 54% (2018 vs. 2019)
Demonstrating how Google Play supports developers and KR society can bring dramatic uplift in brand impact (incl. Trust, Favorability, DSAT)
Better relationship with gov't and key influencers, increased engagement surface with more gov't entities
[redacted]
Google


Existing programs can be combined & expanded for
in hardware & software.
Content costs
Google

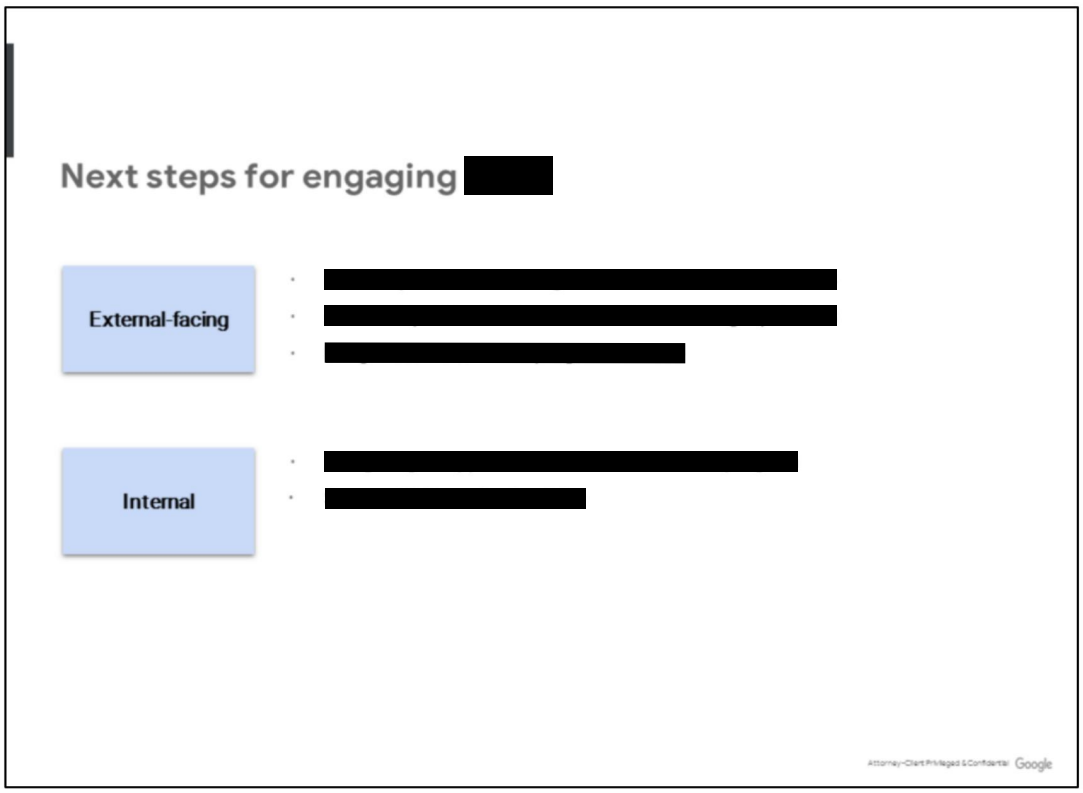

Next steps for engaging [redacted]
External-facing
[redacted]
Internal
[redacted]
Attorney-Client Privileged & Confidential Google

Exhibit D12
Public Redacted Version

EXHIBIT 36

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

IN RE GOOGLE PLAY STORE ANTITRUST LITIGATION THIS DOCUMENT RELATES TO: *In re Google Play Consumer Antitrust Litigation*, Case No. 3:20-cv-05761-JD *State of Utah et al. v. Google LLC et al.*, Case No. 3:21-cv-05227-JD	No. 3:21-md-02981-JD **MERITS REPORT OF** **HAL J. SINGER, PH.D.** Judge: Hon. James Donato

PARTY AND NON-PARTY HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY

to, auto-updating and storage. With the exception of China, where the Play Store is blocked,[72] "Apple and Google control more than 95 percent of the [a]pp store market share through iOS and Android…The [a]pp economy was built on these two platforms[.]"[73] Due in part to the massive installed base of Android mobile devices, the Play Store accounts for more than three times as many downloads as the Apple App Store worldwide—despite the Play Store's absence from China.[74]

28. The Android App Distribution Market is a relevant product market that is distinct, not only from Apple's iOS app distribution market, but also from the markets for web-based apps and distribution channels for applications for PCs or gaming consoles. Given the widespread distribution of the Play Store on Google Android devices throughout the world, developers of Android-compatible Apps, wherever they are located, have strong incentives to list their Apps for distribution on the Play Store. The global reach of the Play Store and the developers who seek to distribute their Apps through it, thus makes the relevant geographic market for the Android App Distribution Market global, except for China, where the government prefers Chinese providers of both mobile devices and operating systems.[75]

29. Direct and indirect evidence establishes that Google has market power in the Android App Distribution Market. Google's 30 percent take rate is high relative to competitive benchmarks, yet the vast majority of Apps are downloaded through the Play Store. As a two-sided platform, the Play Store benefits from indirect network effects, which serve to entrench its market share with developers. Given the Play Store's reach with consumers gained and maintained through the Challenged Conduct, which has also substantially foreclosed alternative channels for Android Apps, developers effectively must list their Apps on the Play Store and agree to its restrictive conditions, which in turn act as substantial barriers to entry for effective competition from rival App stores.

30. Google has provided inducements, imposed a variety of restrictions, and erected various technological barriers to substantially foreclose rival App stores and the direct downloading of Apps. It has done so to achieve and maintain its market power in the Android App Distribution Market. More specifically, Google has engaged in the following conduct in the Android App Distribution Market:

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72. VPNDada, *How to Access Google Play Store in China*, vpndada.com/access-google-play-store-china/ ("If you buy an Android phone in China today, you won't find the Google Play App store pre-installed on that phone. Instead, depending on the brand of the phone, it will come with some other App stores, mostly likely one offered by a Chinese company.").

73. David Curry, *App Store Data (2022),* BUSINESS OF APPS, (Jan. 11, 2022), businessofApps.com/data/app-stores/ ("Outside of China, Apple and Google control more than 95 percent of the App store market share through iOS and Android, respectively. . . The App economy was built on these two platforms, which have expanded their offerings to include Apps for consumers and every type of business.").

74. *See, e.g.,* Sensor Tower, *2021 – 2025 Mobile Market Forecast,* (2021) at 7, go.sensortower.com/rs/351-RWH-315/images/Sensor-Tower-2021-2025-Market-Forecast.pdf (showing 109 billion Play Store App downloads worldwide in 2020, compared with 34 billion App downloads in the Apple App Store).

75. GOOG-PLAY-004253884 at -894 ("Samsung Leads in All Retail Driven Markets except China") (chart shows Apple and Samsung shares in different countries, with the Chinese market dominated (60 percent) by local OEMs).

a. *Financial Inducements*: Google achieved its power in the Android App Distribution Market by making payments that incentivized carriers (and OEMs) to distribute Google Android mobile devices and dissuaded (and in some cases prevented) them from developing, promoting, or offering alternative App stores, including their own stores. Google was willing to operate the Play Store at a loss to achieve these purposes but, once power was achieved, Google dramatically reduced or eliminated these payments.

b. *Bundling of Apps and APIs*: Google requires OEMs to pre-install and prominently place the Play Store on all Google Android devices as a contractual condition of licensing GMS, which includes Google's most popular Apps, including Google Maps, YouTube, Chrome, Google Search, and Gmail. OEMs must also install this bundle of Apps to gain access to crucial programming interfaces necessary for many common Android Apps to properly function. The Play Store's prominent position inhibits competition from competing App stores.

c. *Anti-steering Restrictions*: Google's agreements with App developers prohibit developers from steering users within the App to other App stores, platforms, or websites to purchase or download Apps.[76]

d. *Tie of YouTube, Google Search, and Play Store Advertising to the Play Store*: App developers' access to valuable advertising opportunities on YouTube and Google Search is only available for Apps distributed through the Play Store.

e. *Substantial Financial Inducements to Large Developers in Return for MFN Provisions*. Faced with the prospect of potential competition from other App stores (including the potential for large developers to create their own App stores), Google offered large financial inducements to large developers in order to secure contractual commitments that they would not provide unique content to Google competitors. Google called this program "Project Hug," and it was designed to "mitigate" the risk of competition.

f. *Revenue Agreements in Exchange for Exclusivity Provisions:* Google's recent agreements with OEMs require OEMs to provide exclusivity for the Play Store in exchange for millions of dollars in revenue sharing payments.

g. *Exclusion of Facebook from App Distribution*: I understand that Google considered erecting certain technical roadblocks involving installation or update permissions in order to impede Facebook's ability to deploy a competing App store. I further understand that there is evidence that Google has thus far refrained from doing so after assurances from Facebook that it did not intend to compete with Google in third-party app distribution. I also understand that

76. *See* Google Play Payments Policy, §4, https://support.google.com/googleplay/android-developer/answer/9858738?visit_id=637994598201252840-4239604614&rd=1.

Google has attempted to prevent (and may have succeeded in preventing) App distribution through the Facebook news feed by ensuring that Facebook uses Google Play's technologies for such distribution. I am not opining on the existence of such agreements. Nevertheless, if there were such agreements, they would very likely have generated anticompetitive effects.

h. *Technical Barriers*: Google imposes default settings and warnings that make it unnecessarily difficult for users to download rival App stores and Apps from rival App stores or from developer websites, and auto-updating functionality is limited to the Play Store and certain pre-installed Apps.

31. Google's conduct suppresses the development of competing App stores and the distribution of applications outside of Google Play. Google's conduct has substantially foreclosed critical distribution channels for competitors, raised barriers to entry in the Android App Distribution Market, and prevented the use of alternative In-App Aftermarket providers. For example, multi-homing—the use of alternative App stores on the same device—would occur more extensively in the absence of Google's restraints. In a more competitive world, steering by altering the relative price of initial downloads of Apps would allow developers to direct consumers to lower-priced alternatives, including direct downloads from their own websites or competing App stores that charge lower take rates.

32. In the absence of Google's conduct, competition would have led to lower prices. With a combination of multi-homing and steering, developers could charge a lower price for Apps to consumers who would download Apps from a lower-cost App platform or website. This in turn would exert competitive pressure on Google to lower its own take rate.

The Aftermarket for Services in Support of Consummating Purchases of In-App Content

33. Following the download and installation of an App, developers may offer to the consumer digital content related to the App (In-App Content). The matchmaking services offered by Google in the Android App Distribution Market are distinct from the services offered in support of consummating purchases of In-App Content. The In-App Aftermarket involves transactions between developers and sellers of services, including payment processing, record keeping, and unlocking of content, needed to consummate a purchase of In-App Content. From the developer's perspective, certain functions are needed for a consumer to be able to purchase In-App Content, including billing (also present in the Android App Distribution Market) and unlocking the In-App Content on the user's phone (not present in the Android App Distribution Market). Accordingly, the developer's demand for these services in the In-App Aftermarket is derived from the consumer demand for In-App Content. Unlike the two-sided Android App Distribution Market, the In-App Aftermarket is one-sided. Indirect network effects are not present in the In-App Aftermarket. While the App developer delivers the In-App Content, because of Google's requirements an App developer cannot complete the transaction without using Google's In-App Aftermarket Service, Google Play Billing ("Google Play Billing" or "GPB"). By forcing developers to complete transactions through Google Play Billing, Google has effectively tied the In-App Aftermarket to the Android App Distribution Market and forced developers who distribute an App to a consumer through Google to forever use Google as a middleman for the consumers' purchase of In-App Content for such an App. Absent this tie-in, developers could either provide or engage third parties to provide in the In-App Aftermarket the services now provided by Google.

with mobile carriers, OEMs, and developers to restrain competition from other App stores.[402] I also understand that Professor Schmidt finds that Google imposes overly broad technological barriers that inhibit the installation and usage of alternative App stores on Google Android devices, compared with the Play Store.

1. Google's Revenue-Sharing Agreements

177. Before Google had acquired monopoly power in the Android App Distribution Market, Google used revenue-sharing agreements ("RSAs") with major mobile carriers to dissuade competitive entry and expansion by rival App stores. Commencing [redacted] examples. In 2009, as part of a broader agreement, Google entered into a revenue-sharing agreement with [redacted] wherein Google agreed to provide [redacted] with 25 percent of each App transaction, while Google retained only five percent.[403] Google continued to pay [redacted] a 25 percent share of app credit card sales through June 2014.[404] From [redacted] Google paid [redacted] leaving only five percent to Google.[405] By 2014, when Google had begun renegotiating these agreements, Google had reached Play Store RSAs on similar terms with carriers around the world.[406]

178. During 2009 to 2012,[407] when Google was retaining up to five percent of the developers' revenues—and ceding the residual 25 to 27 percent of developer revenues to OEMs and mobile carriers—Google was not covering its marginal costs, and thus not covering its average variable costs,[408] of operating the Play Store. According to its financial data, Google's gross profit from the Play Store was negative as late as 2011, and operating profit was negative into 2012.[409] Google's documents indicate that paying carriers 25 percent for distribution of the Play Store would have resulted in losses for Google, making prices below average variable costs on every

402. *See, e.g.*, GOOG-PLAY-003776161.R at -176.R (table on common partner types and what they do, including mobile carriers that "maintain Search exclusivity on devices sold through their channel," and OEMs that "pre-install suite of Google Apps; Google Search exclusivity.").

403. GOOG-PLAY-001400503 at -530 (§ 14.12(b)); GOOG-PLAY4-000284361 at -365.

404. GOOG-PLAY-004542110; GOOG-PLAY-000131205.R at -232.R.

405. [redacted]

406. *See, e.g.* GOOG-PLAY-001886008.R at -011.R (showing revised app revenue share percentages for various carriers in 2013, with "previous rates" as 25% credit card, 27% direct carrier billing ("DCB") and "new guidance" as 0% credit card, 15% DCB); GOOG-PLAY-000131205.R at -232.R—233.R (2014 presentation showing app revenue share percentages for various carriers at 25% credit card, 25%-27% DCB); GOOG-PLAY-001385324 at -345 (2010 presentation noting that "Rev Share % paid to developers and carriers" is 95 percent total).

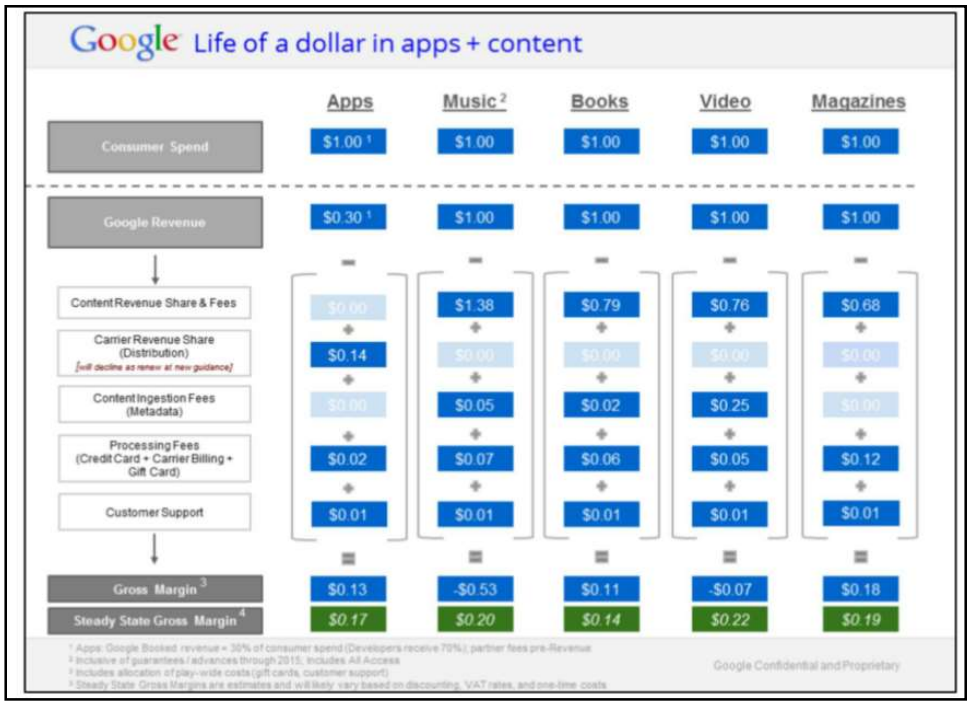
407. *See* Part V.A.1.a.

408. Average variable cost refers to variable costs divided by the *total* quantity of output produced. Marginal cost refers to the additional cost incurred by producing *one additional unit* of output. There may be certain variable costs such as customer support that Google incurs when output expands considerably, but that are not incurred when output expands by one unit. Thus, Google's average variable cost will always exceed its marginal cost. Because Google continues to incur expenses at the margin such as processing fees for each sale, its marginal costs are a good approximation of its average variable costs.

409. GOOG-PLAY-000416245 (showing gross profit of negative $5 million in and operating profit of negative $126 million in 2011. Gross profit is positive $75 million in 2012; operating profit is negative $72 million in 2012).

App transaction involving payment. For instance, an October 2013 presentation indicates that Google's first full year of positive gross margins for the Play Store was 2013 and, based on the fact that its gross margin that year was $0.13 per $1 in consumer spend, Google's gross margins would have approached zero had Google continued to pay $0.25 per dollar to carriers, rather than the $0.14 per dollar it was paying carriers on average in 2013. Testimony from Google witnesses confirms that the Play Store lost money on every App sold when the Play Store kept five percent (or less) of developer revenue.[410]

FIGURE 13: GOOGLE'S GROSS MARGINS ON THE PLAY STORE IN 2013



These 2013 figures indicate that anything approaching a 25 percent payment to the carriers would not have been a sustainable long-term strategy, as it would have been below Google's marginal costs and hence below its average variable costs.[411]

179. Based on its financial data, my best estimate is that Google's marginal costs during the period 2016 through 2020 were approximately [redacted] percent of revenue, which if applicable earlier would have [redacted] its [redacted] percent revenue share net of payments to U.S.

410. Eric Chu, former Head of the Android Developer Ecosystem, testified that Google was losing money when it kept only five percent of developer revenue. Chu Dep. 85:21-86:1. Jamie Rosenberg, VP of Strategy and Operations in Google's Platforms and Ecosystems Division, testified that, when Google was paying carriers 25 percent of developer revenue (and 27 percent with direct carrier billing), Google was losing money on every app it sold. Rosenberg Dep. 186:4-20. Rosenberg testified that 2013 was the first year that Play earned positive gross margins, and that this turnaround was in part the result of Google having negotiated a higher revenue share with carriers. *Id.* at 183:15-22 (discussing GOOG-PLAY-004499366.R at -369). Patrick Brady, a Google executive who worked as a liaison between Android Market and OEMs and carriers, testified that Google lost money on Android Market. Brady Dep. 56:15-20.

411. GOOG-PLAY-004499366.R at -378.R.

mobile carriers.[412] Moreover, Google's marginal costs likely would have been even higher in earlier years, when the Play Store was operating at a significantly smaller scale.

a. Carrier Revenue-Sharing Agreements Eliminated the Threat of Competition from Mobile Carriers

180. In 2009, Google noted that "the greatest threat to Android Market is that carriers can easily set up their own, controlled, application market that will be the default on devices that are not co-developed by Google."[413] Record evidence indicates that Google implemented revenue sharing with carriers to stave off competitive entry by mobile carriers in the Android App Distribution Market. These revenue-sharing agreements involved "giving generous revenue share that more or less matches what they would make from their own markets," until "carriers will be unable to compete with their own offerings because their own offerings will be so limited in comparison."[414] According to Google, "Rev share is a big (if not 'the') reason that carriers are loosening their grip on app distribution."[415]

181. Record evidence indicates that Google recognized that most carriers to which it offered revenue share deals were pursuing their own App stores.[416] Revenue sharing agreements with carriers were designed to incentivize the carriers to promote the Play Store over their own App stores.[417] As one 2014 Google presentation observed, "We cut carriers in to disincentivize building their own stores."[418] Although the agreements did not prohibit carriers from developing their own stores, record evidence indicates that the agreements incentivized the carriers not to compete with the Play Store.[419] A 2019 Google presentation observes that Verizon discontinued its "VCast Apps Store" in 2013 and that this decision "coincided with [the] addition of [a] direct carrier billing option on Play," which gave Verizon the opportunity to earn revenue share from distributing apps on its devices exclusively through the Play Store.[420]

182. Google initially provided major U.S. carriers with the lion's share of the take rate Google extracted from developers (typically 25 percent of App sales revenue going to the carrier, five percent to Google, and 70 percent to the developer).[421] Google was able to sustain such losses via other revenues (such as advertising revenues from Search). As demonstrated below, it eventually anticipated recouping any losses from the early days of the Play Store, after the threat of competitive entry subsided, by curtailing payments to carriers.

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412. *See* Table 8, *infra* (showing In-App Aftermarket Impact & Damages (8/16/2016 – 5/31/2022). Row 7 shows marginal cost calculated at [redacted] of consumer expenditures. This includes all direct costs of sales and direct operating expenses. *See also* work papers for this report.

413. GOOG-PLAY-001423609.

414. *Id.*

415. GOOG-PLAY-001381141.

416. *See* Rosenberg Dep. 174:3-181:14; GOOG-PLAY4-000339939; GOOG-PLAY-001381054; GOOG-PLAY-001423609.

417. GOOG-PLAY4-000339939; GOOG-PLAY-001423609.

418. GOOG-PLAY-004565563.R at -567.R.

419. *Id.*; *see also* GOOG-PLAY-001423609; GOOG-PLAY-008427238.

420. GOOG-PLAY-007328714 at -750.

421. GOOG-PLAY-001400503; GOOG-PLAY4-000284361; ATT-GPLAY-00002235; GP MDL-TMO-0080283; GP MDL-TMO-0029572; GP MDL-TMO-0029567; GP MDL-TMO-0029583.

183. According to Tom Moss, Google's Head of Japan new business development, Google perceived the Android Market as the "bitter pill" for mobile carriers, and the revenue share as the "sugar" that makes the pill go down.[422] In 2009, Google's plan was to make the initial offer sweet enough for the carriers so that they would not distribute or invest in their own app stores on their phones. According to one Google document, "The reason we pay T-Mobile rev share is to keep them from creating their own [app] store where they would get far more than 25 percent."[423] Then there would be a "tipping point" when all of the users and developers were wedded to the Play Store, when Google could keep more of the developer revenue for itself.[424] By that point, Google would be able to taper down the payments to mobile operators, which is precisely what it did. Google began reducing the payments to carriers in 2013, and it eventually kept the full 30 percent,[425] easily covering its marginal costs (of approximately eight percent of revenues) and earning an operating profit of $3.7 billion by 2018.[426] By the time the Android App Distribution Market had "tipped" in Google's favor, there was very little chance that a mobile operator would enter with its own app store. Not only did Google plan to recoup its losses from its predatory payments to mobile carriers, it executed its recoupment strategy to perfection.[427]

184. Critically important to Google's predatory strategy was to change the rules in the middle of the game, but only after developers were dependent on Google's ecosystem. Google perceived its strategy as building in multiple "phase[s]."[428] The first phase was "ecosystem building," which spanned 2008 through 2010, and entailed having "multiple OEMs/devices" and "multiple carriers" distribute Android.[429] The second phase was to "extend Google's core business," which entailed extending its power from search and the associated advertisements into adjacent markets such as app distribution. In 2013, Google moved into the final phase, titled "Change the rules/Get a better deal."[430] In June 2009, Google initially recognized that it did "not take a rev-share on Market" because "we don't have a dominant market position right now."[431]

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422. GOOG-PLAY-001423609.

423. Brady Dep. 138:25-143:14.

424. GOOG-PLAY-001423609 ("The solution, of course, is to create consumer demand for Android Market so that the carriers have no choice but to install it and make it easily available. How do we accomplish that? By giving generous revenue share that more or less matches what they would make from their own [app] markets. . . . If we can get carriers comfortable with Market for the near future, there will come a tipping point where consumer demand will be so strong we can set different revenue models and carriers will be unable to compete with their own offerings because their own offerings will be so limited in comparison.").

425. GOOG-PLAY-000443763.R at -772.R.

426. GOOG-PLAY-000416245.

427. Typically, predation is used to denote charging prices below costs. But the term may also refer to a situation when an input provider (here, the carrier or OEM) is paid so much that an equally efficient rival would not find it profitable to match the payment to the input provider while competing, in which case the payments may drive out equally efficient rivals. I understand from Plaintiffs' counsel that, as a legal matter, predation does not require pricing to customers below costs, but also can be established via demonstration that payments to *input providers* do not permit rivals to survive. *See Weyerhaeuser Co. v. Ross-Simmons Hardwood Lumber Co*., 549 U.S. 312, 325 (2007) ("A [predatory-bidding] plaintiff must prove that the alleged predatory bidding led to below-cost pricing of the predator's outputs. That is, the predator's bidding on the buy side must have caused the cost of the relevant output to rise above the revenues generated in the sale of those outputs."). Here, the cost of the relevant output (the cost of operating the Play Store) was approximately eight percent of consumer expenditure, which exceeded the revenues generated in the sale of those outputs (five percent of consumer expenditure) by three percentage points.

428. GOOG-PLAY-001337211 ("Android: OC Quarterly Review – Q4 2010, Oct 12, 2010") at -226.

429. *Id*.

430. *Id*.

431. GOOG-PLAY-011136256 at -287.

After widespread adoption of Google's Android ecosystem and the Play Store, Google could "increase Google net rev. on apps."[432] In sum, Google's anticompetitive strategy for securing the Play Store's dominance entailed changing the rules after millions of users, multiple carriers, and multiple OEMs had adopted Google's ecosystem.

185. As Google's market power grew, Google reduced the carrier's revenue shares (as well as the OEM's revenue shares abroad). In 2013, [redacted][436] And Google finally bested Verizon, successfully amending their revenue-sharing agreement in late 2014 to reduce App credit card sales revenue-share payments to ten percent for nine months, five percent for one year thereafter, and then zero after June 2016.[437] A 2015 internal Google document lauded the multi-million-dollar reduction in the Play Store's cost of sales because Google had "re-negotiated deals with the major carriers at the end of last year which led to significant savings."[438]

186. As actual and potential competition from alternative app stores was eliminated, the carriers had fewer alternatives to the Play Store. As explained below, Google's revenue share agreements also prevented the emergence of non-carrier third-party app stores, leaving the carriers with fewer alternatives. The importance of eliminating competition from carriers is evident in Google's internal documents. Even in 2019, Google noted that cancellation of the remaining carrier revenue share agreements could lead to mobile devices being sold with "an alternative App store (e.g. Amazon Underground)," and that, if "alternative app stores became a viable distribution channel for apps …**Play revenue will be at risk and the MADA would come under pressure**."[439] According to Google, "[c]arriers would configure Android devices in a way most profitable to them," through these "alternative app stores."[440]

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432. GOOG-PLAY-001337211 at -226.
433. [redacted] GP MDL-TMO-0001831; GP MDL-TMO-0002071.
434. [redacted] GP MDL-TMO-0001831; GP MDL-TMO-0002071.
435. [redacted]
436. [redacted]
437. GOOG-PLAY-003605103; GOOG-PLAY4-002178046 at -8049; GOOG-PLAY-002891881 at -882 (2016 internal Google email noting Verizon's complaint that "dcb payments are insignificant and they want the cc back again").
438. GOOG-PLAY4-004677224 at -225; *see also* GOOG-PLAY-001184813 at -823 (2015 internal Google presentation noting Play Store revenue share agreements give carriers "~15% of DCB related consumer App spend (prev. 27% DCB, 25% CC)").
439. GOOG-PLAY-004235359 at -360 (emphasis in original). "MADA" refers to the Mobile Application Distribution Agreement, which is the licensing agreement Google offers OEMs to license Google Mobile Services.
440. *Id.*

187. As explained in Part II.C.2.a, the Android App Distribution Market is characterized by significant the barriers to entry for a rival App store, including strong indirect network effects, which made for a dangerous probability that Google would recoup its early losses. Google's control over mobile devices meant that developers had strong incentives to make their apps Android-compatible; additional apps attracted users, which in turn attracted developers—a virtuous cycle that entrants could not exploit, at least in part due to Google's strategy. Indeed, the probability of recoupment was so high that today we observe no significant competition in the Android App Distribution Market despite the fact that Google has been recouping its initial losses for almost a decade.

188. In short, once indirect network effects kicked in, granting Google an insurmountable monopoly in the Android App Distribution Market, Google was able to discontinue those incentives without fear of losing market share. As Google executive Jamie Rosenberg reportedly later commented: "We cut carriers in to *disincentivize* building their own stores and fragmenting the ecosystem. It worked."[441] Economists recognize how much an early, "first-mover" advantage means to incumbents in the context of network effects.[442]

189. Because Google's revenue-sharing agreements eliminated the threat of competition from mobile carriers (and other potential entrants such as Amazon), and did so in a predatory (below-cost) manner, and because Google was able to recoup the losses from the predatory payments to mobile operators with monopoly profits from future periods, I conclude that this element of the Challenged Conduct was anticompetitive. Furthermore, Google could have partnered with mobile carriers using less-restrictive alternatives. In a more competitive but-for world, Google could have pursued a non-predatory strategy.[443]

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441. GOOG-PLAY-000439987.R at -40012.R (emphasis added).

442. *See, e.g.*, Agam Gupta et al., *Combating incumbency advantage of network effects: The role of entrant's decisions and consumer preferences*, 20(1) COMPETITION AND REGULATION IN NETWORK INDUSTRIES 3 (2019); Marvin B. Lieberman & David B. Montgomery, *Conundra and progress: Research on entry order and performance*, 46 LONG RANGE PLANNING 312 (2013), sciencedirect.com/science/article/abs/pii/S0024630113000344?via%3Dihub.

443. I have read and considered deposition testimony regarding so-called "walled gardens" operated by wireless carriers before the Play Store achieved dominance in the Android App Distribution Market. For example, Android founder Andy Rubin testified that walled gardens were the greatest threat to Android Market in 2009. Andy Rubin Dep. 79:16-80:9 ("Q. What did you believe was the greatest threat to Android market at the time [in February 2009]? A. Walled gardens. Q. . . . Do walled gardens include stores opened by carriers for their users? A. So if the carriers had this propensity to run these closed walled gardens where consumers had little choice of where they got their content from, and we're creating a new operating system that could point to any store, it's not a big leap to figure that the carriers will continue to do what they were already doing."). According to Mr. Rubin, "if I was an AT&T subscriber and the only way I could get ring tones was through an AT&T store, I felt like I was locked in because if I were to switch to a Verizon as a customer, as a consumer, then I would lose all my ring tones I got from my AT&T store and I'd have to start over and spend money again on Verizon and do the same thing inside of their walled garden." *Id.* 51:34-52:9. To the extent that Google intends to use walled gardens as an efficiency justification for the Challenged Conduct, I do not find it persuasive. This would be tantamount to claiming that competition in App distribution because would have been harmful to consumers. Although it may be that some carriers have restricted the interoperability of ring tone purchases, I have seen no evidence that carrier stores have ever systematically restricted the interoperability of popular third-party Apps such as Facebook, Netflix, and so on. According to a Stanford Business School case study prepared based on interviews with Google employee Rich Miner, carrier "walled garden" stores before the emergence of Android primarily sold "basic content," such as music, ring tones, and java games, for users of non-internet connected "feature phones." *See* GOOG-PLAY-001146587 at -546; 595-96. According to this study,

b. Revenue-Sharing Agreements Inhibited the Threat of Competition from OEMs and Other Third-Party App Stores

190. Google's carrier revenue sharing agreements also helped to prevent OEMs and other third-party app stores from gaining a foothold in the Android ecosystem. As detailed in the prior section, Google's payments to carriers made its operation of the Play Store (temporarily) unprofitable. This implies that an equally efficient rival that sought to compete with Google by matching (or exceeding) its payments to mobile carriers would not be able to do so profitably.

191. Carrier revenue sharing agreements also inhibited third-party App stores from competing by offering larger revenue shares to developers. Carriers in the United States controlled which App stores were preloaded on devices; without the support of a carrier, third-party App stores faced higher barriers to reaching consumers. Google's high revenue share payments provided economic disincentives for a carrier to preload a third-party App store. An OEM or other third-party App store that attempted to attract developers to their store by offering less than a 30 percent take rate would have had less revenue available to offer to carriers. Record evidence indicates that Google recognized this dynamic. In 2011, a Google employee emailed Android founder Andy Rubin regarding "that bookstore in seattle" (evidently a reference to Amazon), explaining that they appeared to be planning to offer developers a 20 percent take rate, and that Cisco was preparing to offer a 15 percent take rate ("launching an enterprise app store and giving developers 85%.")[444] Mr. Rubin responded, "How do you think they are going to get distribution when we give the carriers 30%?"[445] An Amazon executive testified that "there were conversations about Amazon Appstore preinstalls" with carriers between 2011 and 2013 and "Amazon found it very difficult to achieve any of those preinstall[] deals."[446]

2. Google's Exclusionary Restraints on OEMs

192. I understand that three contracts typically govern the relationship between Google and OEMs. First, OEMs enter Android Compatibility Commitments ("ACCs"), which replaced Anti-Fragmentation Agreements starting in 2017.[447] Broadly speaking, it is my understanding that AFAs and ACCs prevent OEMs from selling any "forked" Android-based devices that do not meet Google's compatibility standards. Provisions in a typical AFA read as follows:

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continuing to operate "walled gardens" in post-Android era would limit the development and availability of applications and reduce overall download revenue. *Id.* at -601. Nor have I seen evidence that wireless carriers would risk losing substantial mobile broadband revenue by forcing prospective customers to delete their popular third-party Apps before joining a new mobile broadband network.

444. GOOG-PLAY-001547487 at -488.

445. *Id.*

446. Morrill Dep. 123-124.

447. GOOG-PLAY-000458664.R (2017 Google presentation that reads, "Starting in April, we will be rolling out a new AFA – known as the Android Compatibility Commitment (ACC)."); GOOG-PLAY-000422837 at -838 (February 2017 email from Google's Hiroshi Lockheimer to a Samsung executive explaining that Google "will no longer be calling it the AFA but rather the ACC -- the 'Android Compatibility Commitment.'"); GOOG-PLAY-000127155 (Standard AFA Agreement signed by Huawei Device (Dongguan) Co. Ltd. Effective April 6, 2015); GOOG-PLAY-000808433 (LG AFA effective 1/25/2011); GOOG-PLAY-000808062 (Motorola AFA effective 10/2/2015); GOOG-PLAY-000808451 (HTC AFA effective 6/14/2012); GOOG-PLAY-003604523 (Samsung AFA effective 5/9/2012); GOOG-PLAY-000416448 (Sharp ACC signed 8/28/2017).

- Company will not take any actions that may cause or result in the fragmentation of Android.

- Company will only distribute Products that are either: (i) in the case of hardware, Android Compatible Devices; or (ii) in the case of software distributed solely on Android Compatible Devices.

- Company may not distribute a software development kit (SDK) derived from Android, or derived from Android Compatible Devices.[448]

193. Record evidence indicates Google considers forks "a huge strategic headache for Google," because they could allow third parties to "grant exclusivity on an Android device to a competitor" or to promote a competitor by preloading its services.[449] OEMs must agree to an AFA (or now an ACC) in order to enter into MADAs, discussed in detail in the following subsection. Both are required to gain access to GMS, which has become critical for many Apps to function.[450] Finally, most OEMs enter into a Revenue Sharing Agreement—whereby Google shares revenue it earns on the device with the OEM.[451]

a. Google's Mobile Application Distribution Agreements Require Distribution and Prominent Placement of the Play Store

194. Google owns some of the most highly valued and widely used Android Apps, including Google Search, Play Store, Maps, Chrome, Gmail, and YouTube. Yet Google refuses to make these Apps individually available to OEMs for pre-installation, instead requiring OEMs to pre-install an entire GMS suite or forgo installation of *any* Google proprietary app.[452] It is all or nothing.[453] As explained in the Majority Report of the Congressional Subcommittee on Antitrust, Commercial and Administrative Law:

> Only through Google's licensing agreements can smartphone manufacturers access Google's proprietary Apps, such as Gmail, YouTube, Chrome, Google Maps, and Google Play Store. In return, Google requires that certain Apps must be pre-installed and must receive prominent placement on mobile devices.[454]

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448. GOOG-PLAY-000127155 (Standard AFA Agreement signed by Huawei Device (Dongguan) Co. Ltd. Effective April 6, 2015).

449. GOOG-PLAY-001559464.R at -469.R.

450. I understand that Professor Schmidt's finds that GMS is necessary for many Apps properly function. *See also* GOOG-PLAY-001559464.R at -473.R ("Can partners sign just the ACC or just the MADA? I guess but this would be kind of pointless, since they need both to get GMS.").

451. *See, e.g.,* GOOG-PLAY-002604372 [redacted]

452. Google's MADA refers to these Apps as "Core Applications." *See, e.g.,* GOOG-PLAY-000808375 at -377-378 (2018 Motorola MADA); GOOG-PLAY-004552342 at -344 (2017 Samsung MADA § 1.16 including Search, Chrome, Gmail, Maps, YouTube, and the Play Store). In addition to the "Core Applications," some MADAs require installation of region-specific Apps called "Flexible Applications." *Id.* at -344, -347 (§§ 1.15, 3.3). Earlier MADAs defined the applications simply as "Google Applications." *See, e.g.*, GOOG-PLAY-000620996 § 1.1 (2011 Archos S.A. MADA). *See also* Android GMS, *The best of Google, right on your devices*, www.android.com/gms/.

453. GOOG-PLAY-003776161.R at -177.R (discussing MADA as of 2015: "All of the 11 core Apps must be pre-loaded...OEM's cannot pick Apps a la carte.").

454. *Majority Staff Report* at 212. *See also* GOOG-PLAY-000400751.R at -773.R.

Google recognizes the importance of GMS: "Smartphones aren't very useful without an App store, map app, etc. OEMs need to either license those services through Google or else bear the expense of developing their own services."[455]

195. In addition, Google places a number of proprietary APIs in Google Mobile Services. I understand that Professor Schmidt finds that, without access to those APIs, a mobile device based on AOSP or a forked version of Android will lack access to many commercially important applications. In order to access these critical APIs so that applications can work, and to access certain highly demanded applications, OEMs must sign a MADA with Google to obtain the entire suite of GMS Apps.[456]

196. A typical MADA includes several clauses that require an OEM to give preference to Google Search and other applications in the GMS suite, including the Play Store. GMS Apps must be pre-loaded on devices and prominently displayed on the home screens. Google Search must be the default search engine and must also be given prominent placement.[457] The current MADA also requires OEMs to place the Play Store on the home screens of each mobile device.[458] If an OEM wishes to install just one App from the GMS suite, the MADA requires that the "full suite of Apps, services, and APIs" also be installed, and the number of required Google Apps has increased over time.[459] Collectively, all of the Apps in the GMS suite occupy valuable space on each user's mobile device that otherwise could be occupied by competing App stores or other Apps. In certain agreements, if an OEM wishes to allow deletion by the user of any of the Google Apps, the proportion of deletion-enabled Google Apps may not exceed the corresponding proportion of non-Google preloaded Apps that can be deleted.[460] In sum, Google is able to leverage

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455. GOOG-PLAY-001559464.R at -471.R. Google recognizes that "the smartphone business is very competitive: two players, Apple and Samsung, make the lion's share of profits while others operate on very thin or negative margins." *Id*. Licensing GMS, along with revenue shares, can be a "meaningful part of their business," and effectively leave OEMs with no choice but to take Google's conditions. *Id.*

456. GOOG-PLAY-001559464.R at -473.R; *see also* Rosenberg Dep. 189:24-191:1 (testifying that developers write to "APIs that Google provides" and that "if it is an API that is distributed on with, you know, with that package of software on an Android device, then I don't know for certain, but I don't believe that that API would be available on a device that doesn't have Google Mobile Services by definition.").

457. *See, e.g.,* GOOG-PLAY-000025345 at -353—354. *See also* GOOG-PLAY-000400751.R at -773.R ("Recent versions of the MADA require [redacted] to appear on the default home screen.").

458. *See, e.g.*, GOOG-PLAY-004552342 at -347 (§ 3.3: "preload on the Default Home Screen … the Google Play Client") (2017 Samsung MADA); GOOG-PLAY-000808375 at -384 (§ 4.4: "[U]nless Google otherwise approves in writing, Company agrees to the following placement and setup requirements … distribute on the Default Home Screen (but excluding the lockscreen and notification tray) … the Google Play Store icon") (2018 Motorola MADA (3PL)). Google's MADA has become more restrictive on where Play must be placed over time. Prior to 2014, the MADA did not require Android Marketplace, the predecessor to Play, to appear on the home screen. GOOG-PLAY-000620996 at -1002 (§ 10.2(a): "Google Search Widget and Android Market Client are presented to the End User on the panel immediately adjacent to the Default Home Screen.") (2011 MADA between Archos SA and Google Ireland Limited).

459. *See* GOOG-PLAY2-000001992 at -1995 ("If a MADA partner chooses to install a GMS App on a device, the MADA requires the partner to install the full suite of Google GMS Apps, services, and APIs on the device in question.").

460. *See*, *e.g.* GOOG-PLAY-004552342 at -348 (§ 3.4) ("If the Company chooses to make any of the Flexible preloads deletable by the End User, the proportion of Google Applications that are made deletable will not exceed the corresponding proportion of deletable preloads from Company."); GOOG-PLAY-001404176 (noting that "most users

the dominant positions of the Apps in the GMS suite to impose restrictions that are designed to further establish and protect its market power in the Android App Distribution Market.[461]

197. Although Google's MADAs do not prevent OEMs from preloading alternatives to GMS,[462] Google exploits the Play Store's prominent status, which works to the detriment of rival App stores, including any pre-installed near Google's App store.[463] Google's documents recognize the value of the Play Store's preferential placement on the home screens of mobile devices, including its importance to Samsung: [redacted] And in questioning whether users and developers would really choose the Play Store, given a choice, a high-level Google employee wrote, [redacted]

b. Google Has Deployed Multiple Measures in the OEM Channel to Ensure That Amazon Would Not Become an Effective Play Store Competitor

198. Google has taken multiple steps to stop competitors from succeeding with a competing App store. Amazon in particular was a potential competitor that has been substantially foreclosed by Google's conduct, which raised the costs to Amazon of competing with its rival App store. *First*, as discussed above, the MADAs mandate installation of the Play Store as a condition of installing any App in the GMS suite. In 2014, Amazon launched a bare Android device called the "Fire Phone," which was not pre-loaded with any of the GMS Apps. Indeed, users were "locked out" by Google from downloading these Apps. Unsurprisingly, consumer demand for a device that cannot include Apps like YouTube, Gmail, or Google Maps was low, and Amazon discontinued

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just use what comes on the device. People rarely change defaults. This underpins our Toolbar and browser chrome distribution models, including iPhone, with data to prove its success").

461. Google's documents establish that the MADA requirements are essential to the Play Store's dominance. GOOG-PLAY-006355073 ("Fortunately, we'll always have the placement/pre-install advantage which is 90% of the battle."); GOOG-PLAY-004494430.C at -433.C ("Google App distribution to get max usage for minimum cost" is one of four issues "MADA seeks to balance").

462. *See* GOOG-PLAY2-000001992 ("Google's MADAs also do not prevent signatories from preloading an alternative to GMS.").

463. Samsung's Galaxy Store is an example of this. As discussed below in Part IV.A.2.c, while the Galaxy Store came pre-installed along with the Play Store on the Galaxy S10 and later models, Google has engaged in a course of conduct designed to discourage effective competition to the Play Store from Samsung. Google has recognized its efforts were effective, pronouncing that "cannibalization of Play store revenue due to Galaxy store" as "none to minimal." *See* GOOG-PLAY-000443908 at -909. Economists recognize, and multiple studies have shown, that defaults can significantly affect consumer choice. *See* Brigitte C. Madrian & Dennis F. Shea, *The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior*, 116(4) QUARTERLY JOURNAL OF ECONOMICS 1149-1187 (2001); Zachary Brown, Nick Johnstone, Ivan Haščič, Laura Vong, and Francis Barascud, *Testing the effect of defaults on the thermostat settings of OECD employees*, 39 ENERGY ECONOMICS 128-134 (2013); John Peters, Jimikaye Beck, Jan Lande, Zhaoxing Pan, Michelle Cardel, Keith Ayoob, and James O. Hill, *Using Healthy Defaults in Walt Disney World Restaurants to Improve Nutritional Choices*, 1(1) JOURNAL OF THE ASSOCIATION FOR CONSUMER RESEARCH 92-103 (2016).

464. GOOG-PLAY-000832471.

465. GOOG-PLAY-000292207.R at -226.R. *See also Id.* at -213.R ("How many users and developers are actually choosing Google Play vs. going with the default product . . . [?]"); GOOG-PLAY-006355073.

the device within a year.[466] The MADAs prevented an OEM from customizing the Apps on mobile devices by precluding an alternative bundle comprised of a rival App store (including Amazon's App store) alongside Google's other popular (non-Play Store) Apps—that is, a rival App store would need to compete across every dimension of Google's App suite at once, effectively raising its costs. Without a successful "Fire Phone" due to Google's restrictions, Amazon was less likely to fully compete in the Android App Distribution Market by investing and developing a mobile App store that would rival the Play Store in scope and reach.[467]

199. *Second,* in 2015 Amazon released a backdoor to the Amazon Appstore (Amazon's App distribution store) through the Amazon App (Amazon's shopping App) that was available for download on the Play Store. As one media outlet noted, "The move effectively turns Amazon's flagship application—an App that has somewhere between 50 million and 100 million installs, according to Google Play's data for the smartphone version—into an App store App that directly competes with Google Play, while also being sold on Google Play." [468] Google quickly forced Amazon to update its App to remove this functionality.[469]

200. *Third*, using its control over access to the GMS suite and the dominant position of the Play Store in the Android App Distribution Market, Google was able to introduce additional restraints that strongly discouraged use of bare Android devices. For example, consumers who had purchased an App via the Play Store were prohibited from re-downloading that App to a bare Android device that could not include the Play Store. These consumers would have to repurchase the same App on their bare device to keep using it.[470] Accordingly, consumers wishing to move to non-Google Android devices, such as the Amazon "Fire" phone, would be required to repurchase all Apps they had previously purchased from the Play Store or contact the developer directly to request a free download on the new device.

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466. Benjamin Edelman & Damien Geradin, *Android and competition law: exploring and assessing Google's practices in mobile*, 12(12-3) EUROPEAN COMPETITION JOURNAL 159, 167 (2016) [hereafter Edelman & Geradin].(citing Geoffrey Fowler, *Amazon Fire Phone Review: Full of Gimmicks, Lacking Basics*, WALL STREET JOURNAL (Jul. 23, 2014), wsj.com/articles/amazon-fire-phone-review-full-of-gimmicks-lacking-basics-1406077565).

467. *See* GOOG-PLAY-001317740 at -741 (2011 Google summary of competing App stores: "*Amazon making play at mobile content distribution* with launch of Appstore for Android… *branded headseat (Amazon Blaze) on the horizon*.") (emphasis in original); GOOG-PLAY-001451619 (Google negotiators recommend rejecting any requests from Amazon to modify MADA for Fire devices, knowing GMS would make the device stronger but competing App stores would cause "fragmentation."); *see also* GOOG-PLAY-007657997 at -8010 (2017 concern that although Amazon's App store "lacks critical mass of users and developers today," "[i]f they can achieve either, we believe this will create a virtuous cycle drawing in more users and developers – increasing appeal of Fire devices and greatly increas[ing] the severity of the threat.").

468. GOOG-PLAY-000832219 at -221.

469. Google's Jamie Rosenberg made this clear in an email to Sameer Samat on March 14, 2015. GOOG-PLAY-000832219 ("New downloads of the Amazon Mobile App (as of 12/12) would not have App Store functionality.").

470. Edelman & Geradin at 167 (citing Fowler, *Amazon Fire Phone Review*). The Nokia X phone, also launched in 2014, met a fate similar to the Amazon Fire Phone for these reasons. *Id*.

c. Google Discouraged Samsung from Effectively Competing with the Play Store in the Distribution of Apps in the Android App Distribution Market and Entered into Deals with Developers to Mitigate the Risk of Competition from Samsung

201. Google's treatment of Samsung, the largest Google Android OEM, illustrates Google's recognition of the potential competitive threat posed by a competing App store and the lengths Google would take to avoid such competition. Google engaged in numerous detailed, strategic programs to "mitigate challenges" posed by Samsung's expansion of its App store,[471] "Samsung Apps," later rebranded as the "Galaxy Store."

202. As early as 2011, Google recognized that competition from a Samsung App store could be "destructive" to Google Android because it would lead to "developer exclusives, competing business models, etc."[472] Google also feared that Samsung could secure exclusivity of popular new Apps meaning that "the App is available on Samsung stores or devices and not on Play for a period of time, usually months."[473] Pre-loading of the App store on all Samsung devices would allow Samsung to "shift consumer behavior away from shopping for Apps and games in the Play Store. This fundamentally impacts Play store effectiveness."[474] Google's goal was: "[G]et them to stop distributing Apps through Samsung App store"[475] or otherwise "duplicat[ing] our services on Android."[476]

203. Once Samsung's Galaxy Store was open, Google executives referenced a stated "desire between the parties to reduce competing services."[477] By July 2014, Samsung reassured Google, "We definitely don't want to compete with Play store."[478] To Google, Samsung minimized its efforts, emphasizing that its new store would be limited to a few hundred Apps, predominantly Apps "customized for Galaxy specific features, such as S Pen and multi-windows," with App categories reduced from 24 to 10. Effectively, Samsung was moving from "a department store approach," to "a small boutique store…."[479] A few days later, following a meeting between Google and Samsung executives, Google noted with reference to Samsung the "winding down of their effort to [create] a full-on App store, as they realize it doesn't make sense to try to compete with us in this area."[480]

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471. GOOG-PLAY-000004762.R at -764.R; *see also* GOOG-PLAY-000367346.R.

472. GOOG-PLAY-006359924 at -925 (explaining "we don't believe Samsung should be cultivating its own developer ecosystem").

473. GOOG-PLAY-006359924.

474. *Id*. at -925.

475. GOOG-PLAY-001438299 at -300. *See also* GOOG-PLAY-004253884 at -907 ("Samsung is competing directly with Google, positioning itself to control more consumer touch points and to enhance control over the home-screen").

476. GOOG-PLAY-001449339 at -340 (explaining "Samsung's duplication of our services on Android" was "one of the critical issues with the partnership right now" and the presence of the "Samsung Apps relative to Google Play" was the "most glaring" example of such duplication).

477. GOOG-PLAY-000417080.

478. GOOG-PLAY-001455849 (explaining the Samsung App store had "grown to a store with 70k Apps," but it had not done well).

479. *Id*.

480. GOOG-PLAY-001847447 at -448 (explaining "Galaxy Apps is a parking place for 'less than 1,000 Apps' that showcase Samsung devices in some way.").

204. In 2018, Google learned that Samsung was aggressively "expand[ing] their ambitions in App & game distribution" with new launches and "actively reaching out to top game developers and asking them [to] consider distribution through Samsung Galaxy App store first or instead of via Play."[481] It also learned that Samsung had "moved the Galaxy Store App icon to sit on the default home screen, next to the Play Store. Previously, it was +1 away."[482] Google's CEO responded by asking Samsung's Chairman to "consider partnership with us in this area, rather than fragmenting user and developer experience."[483] Shortly thereafter, Google proposed making cash payments and other incentives to Samsung if it agreed to limit its offerings and "[r]etain prominent Play branding" within the Samsung store.[484] Specifically, Google offered to host the Galaxy Store "on Play, served via Alley-oop,"[485] and pay Samsung $250 million over a four-year contract. These efforts, known as "Project Banyan" were designed to prevent the Galaxy Store from fully competing with the Play Store by spending "money on game exclusives and deals with the goal of: 1. Increasing devices sales 2. Increasing service revenue through the Galaxy Store."[486]

205. Google's Jamie Rosenberg confirmed that the effect of Google's Project Banyan proposal to Samsung would have been that Samsung and Google would not compete for the time of developers' engineers and would not have competing commercial terms for developers.[487]

206. But Project Banyan alone was not enough to address Google's ongoing fears of competition from Samsung.[488] Google remained concerned that:

- Samsung could drive more developers and users to its store by discounting its rev share to developers as "payment" for exclusives and unique content, and by using "[p]romotions and discounts to users to use their store using notifications, emails, etc."[489]

- Samsung could respond "with a very public and disruptive rev share model (i.e., it just decides that it will take only 5% and use its App store for purposes of building [form of payments] and user profiles and differentiating devices.[)]"[490]

207. "[I]f Samsung wins the hearts & minds of developers on this, it could create enormous pressure on us to unblock their opportunity one way or another," and while developers

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481. GOOG-PLAY-004509271 at -272.
482. *Id*.
483. *Id*.
484. GOOG-PLAY-000004762.R at -4785.R. *See also* GOOG-PLAY-000367346.
485. The technical processes known as "Alley-oop" was a critical part of Google's offering. As described by Google, "Alley-oop" meant that Google provided the "delivery infrastructure for Samsung's Galaxy Store" whereby any download would appear to the user as occurring "through Play without leaving the Galaxy Store." GOOG-PLAY-000464148 at -150. It would also "apply to Game Launcher and any other Samsung product where Apps can be downloaded through the Galaxy Store today." *Id*. In practical terms, that meant Google would continue to receive its 30 percent share of any paid App download through the Galaxy Store, and Samsung could not entice developers with lower take rates. *Id*. at -149—150.
486. GOOG-PLAY-000367346.R at -347.R.
487. Rosenberg Dep. 114:24-115:22 (discussing GOOG-PLAY-007246367).
488. *Id. See also* GOOG-PLAY-007384816 at -818 (Rosenberg: "I said we put a lot of thought into our proposal about how to align incentives to have a single voice to the ecosystem, and so that the teams were not out competing with each other.").
489. GOOG-PLAY-001877016.C at -020.C—021.C.
490. *Id*. at -020.C.

"will tolerate some premium pricing for distribution through Play / Google and all that we provide, but not a gap that wide."[491]

e. Google's New Revenue Sharing Agreements With OEMs Are Designed To Further Entrench the Play Store's Monopoly

208. Google has further insulated the Play Store from competition through its most recent series of OEM agreements. Stylized as [redacted] these agreements [redacted] on the absence of any pre-installed third-party Apps that compete with Google Apps, including third-party App stores.[492]

209. I understand that Google chose to enter into these agreements after certain OEMs had begun to build out distribution to a sufficiently large scale that could allow third-party stores to compete with the Play Store if successfully preloaded.[493] Premier Tier payments compensated OEMs on a [redacted] if the OEM agreed not to allow third-party App stores to be preinstalled on each Premier Tier device.[494] The RSA payments offered by Google were economically significant, as Google expected total spend to be nearly [redacted] in 2020 and up to [redacted] in 2023.[495] Indeed, Google's stated goal was [redacted]

210. Google's RSA agreements prohibiting the pre-installation of competing App stores affected a growing and substantial portion of Android devices shipped. Google has entered into RSA agreements with at least [redacted] OEMs to date.[497] In 2020, based on projections for [redacted] OEMs

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491. *Id.*

492. *See* GOOG-PLAY-004489416.R; GOOG-PLAY-000443763; GOOG-PLAY-004494430.C; GOOG-PLAY-004486928.R.

493. GOOG-PLAY-000443763.R at -773.R..

494. *Id*. at -775.R.

495. GOOG-PLAY4-007239946; *see also* GOOG-PLAY-001555373 (explaining the amount Google would pay for Play protection as part of RSA 3.0 was "based on a couple of things" including: "a) What Xiaomi [a Chinese OEM] signaled to us would be worthwhile for them to take the Google forward tier (largest partner for Forward devices), and b) We did an analysis on how much Xiaomi earns through their 1P services, and triangulated into a dollar amount that we would need to pay to make it worthwhile for them. Other OEM rates were a subset of these.")

496. *Id*. *See also* GOOG-PLAY-001555373 (explaining "[t]he deal is to secure commitments on a Global basis. If we don't align incentives on the Play store, we believe there is a non-zero risk of the following scenarios materializing: • Huawei and Chinese OEMs begin pushing their app store on devices outside of China . . . • At the same time, if we did not structure a deal with Samsung, they would continue to heavily promote their own app store, which would then start to grow in scale . . . • European carriers would then see an opportunity to invest, pushing their own Carrier app stores which we know is preloaded on devices already in some markets • The worst risk to come out of this is that Chinese OEMs and Samsung will no longer need the Play store for Apps on their phones, which would then weaken the leverage the MADA provides • Without MADA, we would not be able to incentivize placement of Widget, which drives ~50% of search revenue on a device and secures other 1P apps like Chrome and Assistant").

497. GOOG-PLAY-000620210 [redacted] GOOG-PLAY-000620638 [redacted]; GOOG-PLAY-005706338 [redacted]; GOOG-PLAY-008111867 [redacted]; GOOG-PLAY-001745614 [redacted]; GOOG-PLAY-000416708 [redacted]; GOOG-PLAY-000620282 [redacted]; GOOG-PLAY-000620442 [redacted]; GOOG-PLAY-000620131 [redacted]; GOOG-PLAY-005706436 [redacted]; GOOG-PLAY-005706676 [redacted]; GOOG-PLAY-007038477 [redacted]; GOOG-PLAY-007038511 [redacted]; GOOG-PLAY-000620478 [redacted]; GOOG-PLAY-005706728 [redacted]; GOOG-PLAY-000416651 [redacted].

who had then signed Google Forward agreements, Google anticipated [redacted] Premier Tier devices to ship in 2020 and 2021.[498] According to Google's internal estimates, as of January 2021, [redacted] devices sold were "Premier Devices," and this was expected to increase in 2021.[499] For some OEMs, all or nearly all of their devices sold in January 2021 were "premier tier," demonstrating the power of Google's revenue sharing terms.[500]

211. The RSA agreements substantially foreclose some of the remaining and most viable distribution avenues for competitive App stores. Indeed, as early as 2014, Google employees recognized that the company might be able to "stem the tide of emerging App stores" by "bring[ing] OEMs closer to us . . . with stricter placement requirements through rev share."[501] The RSA agreements also foreclosed competition from OEM app stores. For these agreements, Google targeted those groups of OEMs that were building, according to its internal documents, "significant distribution scale."[502] Google planned to "incentivize OEMs to prioritize Play" with these agreements.[503] "Prioritizing Play" meant preloading "Play as the exclusive App store on devices."[504] As of 2019, Google's plan was to move "all current non-Samsung RSA partners" to its RSA agreements.[505] Google's internal documents indicate that it focused on "non-Samsung RSA partners" because Samsung was investing in its own Galaxy Store.[506] These new, broad restrictions on potential third-party competitors serve to further entrench the Play Store's dominance.[507]

212. Because Google's exclusionary restraints on OEMs eliminated the threat of vigorous OEM-based competition in the Android App Distribution market, I conclude that this element of the Challenged Conduct was anticompetitive.

3. Google's Exclusionary Android App Distribution Market Conduct and Restraints with Respect to App Developers

a. Google's Developer Distribution Agreements and App Campaigns Program Are Exclusionary

213. Google's agreements with developers inhibit competition from rivals in the Android App Distribution Market by prohibiting the distribution of competing App stores through the Play Store and by prohibiting developers from steering users to lower-priced App distribution channels or using user information learned through the Play Store. Developers are precluded from using the Play Store "to distribute or make available any Product that has a purpose that facilitates

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498. GOOG-PLAY-008006134.

499. GOOG-PLAY-003894142.R at -172.R. I understand that Plaintiffs do not have updated discovery from Google to determine the number of current devices that ship under Premier Tier terms.

500. *Id.* at -173.R. [redacted] premier tier for [redacted]

501. GOOG-PLAY-000449614 at -615.

502. GOOG-PLAY-000443763.R at -774.R.

503. *Id.*.

504. *Id.* at -775.R.

505. GOOG-PLAY4-007239946 at -947.

506. GOOG-PLAY-004502766.

507. GOOG-PLAY-001555373 (explaining, that "Philipp [Schindler, a Senior Vice President and Google's Chief Business Officer] is starting to become more comfortable with the payments on Play to OEMs in order to protect our app store after learning that losing Play protections could lead to a material drop in the value of MADA . . .").

the distribution of software applications and games for use on Android devices outside of Google Play."[508] Nor can developers steer consumers to other platforms or websites to purchase or download Apps or In-App Content: "You may not use user information obtained via Google Play to sell or distribute Products outside of Google Play."[509]

214. In addition, to access Google's App Campaigns program, Android App developers must list their Apps in the Play Store.[510] Only Apps that were distributed in the Play Store could participate in Google's App Campaign program, a program specifically designed to allow developers to place ads for Apps and In-App Content on Google's self-proclaimed most valuable properties.[511] Those "properties," which are specially optimized for the advertising of mobile Apps, included Google Search, YouTube, Discover on Google Search, and the Google Display Network. Google was explicit about this linkage in its marketing, representing that placement in the Play Store enabled developers to "get your App into the hands of more paying users" by "streamlin[ing] the process for you, making it easy to promote your Apps across Google's largest properties."[512] This conduct further entrenched Google's monopoly in the Android App Distribution Market by coercing developers to list their Apps in the Play Store or risk losing advertising access to some of the Internet's most effective advertising space.

b. Google's Project Hug Agreements Are Anticompetitive

215. Google also introduced "Project Bear Hug," later shortened to "Project Hug," which imposed a contractual requirement on major Play Store developers to prevent App stores from entering "exclusives for the most lucrative and risky developers."[513] Project Hug was a key

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508. *See* Google Play Developer Distribution Agreement (as of Jan. 4, 2014) ("You may not use the Market to distribute or make available any Product whose primary purpose is to facilitate the distribution of software applications and games for use on Android devices outside of the Market."); Google Play Developer Distribution Agreement (as of Sep. 25, 2014) ("You may not use the Store to distribute or make available any Product which has a purpose that facilitates the distribution of software applications and games for use on Android devices outside of the Store."); Google Play Developer Distribution Agreement (effective as of June 12, 2020) ("You may not use Google Play to distribute or make available any Product that has a purpose that facilitates the distribution of software applications and games for use on Android devices outside of Google Play."). For years, dating at least back to 2008, Google called this the "Non-Compete" provision. *See, e.g.*, GOOG-PLAY-000054021 at -022; GOOG-PLAY-000054683 at -685 (2008 version). By 2014, Google had dropped this label in favor of calling the provision "Alternative Stores." Compare GOOG-PLAY-000054039 at -041 (2014 version) with GOOG-PLAY-000053975 at -977 (2017 version).

509. GOOG-PLAY-000053875 at -876 (Google Play Developer Distribution Agreement (effective as of Nov. 17, 2020), point 4.9).

510. Google Ads Help, *About App campaigns,* support.google.com/google-ads/answer/6247380?hl=en.

511. *See* GOOG-PLAY-000226999 at -6999—7001 (Co-marketing fund agreement) [redacted]

512. Google Ads Help, *About App campaigns,* support.google.com/google-ads/answer/6247380?hl=en.

513. *Id.* at -019.C.

element of Google's effort to prevent developers from supporting a rival App store.[514] Like Google's payments to OEMs and mobile operators, Project Hug followed a simple formula: pay the potential competitor enough to prevent it from going "off-Play" or from giving a competitor such as Samsung exclusive content, but less than Google's expected loss from damage to its monopoly.[515]

216. As detailed below, Project Hug is shown to be anticompetitive through the economic lens of an MFN imposed by a dominant firm. When employed by dominant platforms such as Google, MFNs have been recognized as impairing competition.[516] Project Hug is also anticompetitive when viewed through the economic lens a dominant firm that makes payments to induce would-be horizontal rivals not to compete against it. Economists recognize that harm to competition occurs when a monopolist or dominant firm pays rivals not to compete. Such payments effectively share monopoly profits with actual or prospective rivals as an inducement to prevent competition from breaking out.[517] Economists recognize that "paying competitors to stay out of the market may be profitable, but doing so reduces competition and is likely to attract very close antitrust scrutiny."[518]

217. Known internally as the [redacted] requirement, Project Hug required developers to [redacted] Google's documents indicate that Projects Banyan and Hug

514. GOOG-PLAY-000445443.R at -458.R. Externally, in negotiations with developers, Google referred to Project Hug as the "Games Velocity Program" ("GVP"). *See* GOOG-PLAY-000932349. Google required developers who signed GVP agreements to keep the deal confidential. *Id.* at -352 ("Neither party may make any public statement regarding this Addendum without the other's written approval.").

515. Another important component of Project Hug was Google's effort to limit the ability of Samsung's Galaxy Store to compete effectively. GOOG-PLAY-000000807. Google's Business Council simultaneously approved Project Hug and efforts to engage Samsung in a four-year commercial agreement that would promote Samsung's "goals to create a services business, to differentiate their device offering and to enable incremental monetization, while promoting Play on Samsung devices and improving the Android gaming experience." *Id.* at -808. In support of this endeavor, Google would offer Samsung [redacted] *Id.* at -809. In return, [redacted] only App stores on default home screen, [redacted] *Id.* at -810—811. This project later became known as "Project Banyan" and is discussed in Part IV.A.2.c above.

516. *See, e.g.*, Jonathan B. Baker & Fiona Scott Morton, *Antitrust Enforcement Against Platform MFNs*, 127(7) YALE LAW JOURNAL 2176-2202, 2177 (2017) (studying the effects of MFNs under an "agency distribution model," whereby "the platform does not take ownership of the good (*e.g.*, the hotel room) but sells it on behalf of the owner at a price chosen by the owner").

517. *See, e.g.,* Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34(2) RAND JOURNAL OF ECONOMICS (2003), 394. ("A hallmark of these anticompetitive agreements is that the patentholder agrees to share its monopoly profits with the challenger in order to induce the challenger to give up its fight.") *Id.* at 393 ("Precisely because patent settlements can be anticompetitive, and because settling parties may have an incentive to insert anticompetitive provisions into their agreements, antitrust interest in the settlements of intellectual property disputes is very high.")

518. Jeremy Bulow, *The Gaming of Pharmaceutical Patents*, *in* INNOVATION POLICY AND THE ECONOMY, 145, 159-73 (Adam B. Jaffe et al. eds., 2004) at 146. *See also* Steven Salop, "Potential Competition and Antitrust Analysis: Monopoly Profits Exceed Duopoly Profits," *Georgetown Law Faculty Publications and Other Works* No. 2380 (2021), https://scholarship.law.georgetown.edu/facpub/2380

519. GOOG-PLAY-000000807 at -810. *See also* GOOG-PLAY-011269238 at -344-345 (showing impact of [redacted] requirement on developer revenue).

worked together to enable Google to continue to reap the rewards of its supra-competitive take rates, by (1) limiting Samsung's Galaxy Store catalog, which minimized the effectiveness of any "deep discounts" Samsung might offer;[520] and (2) drafting contract terms that "[d]isincentivize broad discounts (across many / all Apps to siphon engagement away from equivalent Play app)."[521]

218. Project Hug also imposed [redacted] provisions on certain developers, [redacted] when distributing their Apps and In-App Content through competing App stores or other platforms. For example, one Google document states, "Our GVP deal with [redacted] Such provisions preclude steering to alternative platforms based on a lower price (or a lower quality-adjusted price).

219. In 2019-2020, Google learned of potential emerging App distribution competition from Activision Blizzard King ("ABK")[523]; Riot Games[524]; Supercell[525] and Tencent.[526] Record evidence indicates that Google "pulled all the stops"[527] to offer economic incentives designed to prevent entry by these would-be rivals. Record evidence indicates that these economic incentives took the form of "bespoke" Project Hug deals worth hundreds of millions of dollars. Specifically, Google offered ABK a Hug deal that was valued at $360 million over three years to solidify "ABK's commitment to our platform,"[528] which ABK accepted. Google offered Riot Games $10 million in co-marketing (before a Hug deal was even reached) designed "to stop their inhouse 'App store' efforts", and then followed up with a 4-year Hug deal valued at $112 million.[529] To ensure Tencent ceased working on their nascent subscription platform, Google offered economic

520. GOOG-PLAY-000464148 at -151.

521. *Id.*

522. GOOG-PLAY-007755618.

523. GOOG-PLAY-004702858 (explaining that ABK is working to launch their own mobile distribution platform); *see also* AB-GOOG-000492 (explaining that ABK was working on a mobile distribution platform, internal code name "Project Boston"); Koh Tr. 200:4-16 ("Q. And some of the Project Hug developers specifically told Google that they were considering starting their own competing Android app stores; right? A. That is correct. Q. Riot was one of those? A. That is correct. Q. Can you name all of the other Project Hug developers that you can recall that told Google that they were considering starting their own competing Android app stores? A. Riot and Activision Blizzard King were the ones that were the most direct with us. . . ").

524. GOOG-PLAY-007424789 (discussing how Riot was developing their own "inhouse 'App store'"). *See also* Koh Tr. 200:4-16 ("Q. And some of the Project Hug developers specifically told Google that they were considering starting their own competing Android app stores; right? A. That is correct. Q. Riot was one of those? A. That is correct.").

525. GOOG-PLAY-007424518 at -522 (explaining that Supercell was contemplating "other options" including "launching games on new/other Android Stores").

526. GOOG-PLAY-007421525 (discussing how Tencent was developing their own subscription platform); *see also* Koh Tr. 278:24-279:2 ("Q. And it also references Tencent and Epic's efforts to explore business models that do not involve Google Play for Android; right? A. Yes, that is correct.").

527. GOOG-PLAY-007424789.

528. GOOG-PLAY-004702858. ("Without this deal, ABK claims they will: Launch their own mobile distribution platform[.]").

529. GOOG-PLAY-007424789; *see also* Koh Tr. 286:14-24 ("Q. And you're summarizing here in the second paragraph that 'Riot was on the verge of becoming the next major game company to follow Epic in moving forward with an off-Play Android distribution strategy.' Do you see that? A. Yes, I see that. Q. And you said that you offered a Hug-like deal to convince Riot to change that strategy; right? A. Yes, that is correct.").

incentives valued at approximately $100 million over 3 years.[530] None of these entities have entered the Android App Distribution market.

220. One of the key Google employees responsible for implementing Project Hug has admitted that the terms of the Project Hug agreements, which prevented developers from giving any exclusive or unique content to competitors, including Samsung's Galaxy Store, have effectively mitigated the competition from Samsung. Mr. Koh explained that Project Hug's sim-ship commitment was aimed at ensuring "developers were prioritizing Google Play when they were thinking about launching a new game or a major new content update"[531] and that Google was concerned that developers might strike deals to distribute Apps first through Samsung's Galaxy Store.[532] Project Hug prevented those developers, however, from launching a different version of their game or an early release of their game on Samsung Galaxy or other competing stores. Mr. Koh viewed Project Hug as "mitigating our risk of losing out to competition" from Samsung and other competitors.[533] In this way, Project Hug impaired competition from other stores.

221. At the same time, in June 2019, a Google executive referred to Project Banyan, noting, "[W]e are having a conversation with [Samsung] (confidentially) about them getting rid of their own App store which they are using right now to get game devs to do unique things for their devices in exchange for no rev share (for example)—this is destructive to everyone and they are coming around but it may also require we help them on the economics of stores because they would be giving up something."[534]

222. While Google "halt[ed] work" on Project Banyan in July 2019 and instructed its employees to "not proceed with the related work streams involving our respective App store,"[535] its efforts to minimize competition from Samsung's Galaxy Store had already been effective. In 2019, Google executives presented a "Galaxy Store Performance Update" concluding that the Galaxy Store was unable to meaningfully compete with the Play Store as the Galaxy Store "continues to lack compelling differentiation in terms of new exclusive titles or [In-App Products]],"[536] and that "the cannibalization of Play store revenue due to Galaxy store is none to minimal."[537] This result stemmed from the "firewall that Galaxy store is limited to promotion and curation only for Samsung exclusives" and Samsung's reluctance to "start conflicting with Play curation."[538]

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530. GOOG-PLAY-004696168.R at -174.R. The deal "tie[d] incentives to growth on Play over three years to mitigate off-Play platform investments." *Id.* at -170.R. Google was concerned not only with "alternative distribution risk" but also "alternative monetization risk," as Tencent threatened to "build an off Play payments platform." *Id.* at -169.R, -176.R. To mitigate this "off-Play payments risk," Google "[tied] Hug offers to Play Spend." *Id.* at -169.R.

531. Koh Dep. 362:18-363:1.

532. *Id*. at 364:13-365:4.

533. *Id*. at 366:25-367:16.

534. GOOG-PLAY-002994573 at -574.

535. GOOG-PLAY-004136427.

536. GOOG-PLAY-000443908.R at -911.R.

537. *Id.* at -909.R. The same document presents store engagement metrics indicating that user engagement in the Galaxy Store was minimal in comparison to the Play Store. *Id.* at -913.R (showing Galaxy Store "Sessions/User" metric at just [redacted] percent of the Play Store, and "Time in App/User" metric at just [redacted] percent of the Play Store).

538. GOOG-PLAY-000367346.R at -351.R.

223. Google's subsequent analysis of a major game release, [redacted] confirmed the Update's findings and estimated the [redacted] (across all Apps), or between [redacted] of the amount consumers spent on the same Apps on the Play Store.[539] Thus, Google's pressure and its Project Hug agreements thwarted Samsung's efforts to differentiate its product offerings through exclusives with developers offering unique content at lower prices. Otherwise, more developers and consumers would have been attracted to the Galaxy Store. Google was able to achieve this result even though Samsung was a sophisticated, well-resourced market entrant that secured broad pre-installation of its own App store.

224. Project Hug provided incentives in the form of co-marketing agreements, Google advertisement credits, consultative services, commercial investments, Google Cloud Platform credits, or eSports and YouTube packages.[540] The benefits were significant, typically amounting to around three to five percent of total consumer spend on the developer's paid Apps and In-App Content in the Play Store.[541] In return for these payments, Google required that developers invest in the Play Store (towards Google cloud credits, incremental Google ads spend, or co-marketing in the Play Store), maintain all titles on the Play Store, and commit to simultaneously ship ("sim-ship") all titles on the Play Store the day of a game's launch.[542]

225. Google's Project Hug and the sim-ship requirement in particular proved successful. Within one year, [redacted] game developers had signed Games Velocity Program Agreements.[543] One of the holdouts, [redacted], a popular gaming developer, said that it was considering launching its own "Off-Play Webstore" to avoid Google's commission charge.[544] According to Google, if [redacted] were to migrate all of its spend off Google, the impact would be

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539. GOOG-PLAY-000001317. In a 2019 internal email referencing "top games" such as Harry Potter Wizards Unite ("HPWU") and Pokémon GO ("PG"), Google's Christian Cramer asked, "[a]re we tracking how much traction these top games get on other platforms such as the Galaxy store?" In response, Google's Brian Brazinski reported that Monthly Active User ("MAU") and Daily Active User ("DAU") metrics for the Galaxy Store were only a small fraction of those for the Play Store ("MAU/DAU for both HPWU and PG are -1-2% of Play DAU/MAU"). *Id.* at 318. Similarly, "Total hours played on Galaxy apks -1 % of game time on Play apk." *Id.* More broadly, the same document also estimated that aggregate consumer spend for Apps and Games ("A&G") in the Galaxy Store was about two to three percent of those in the Play Store. *Id.* at 317 ("Galaxy Store grosses $360-$550M today in A&G consumer spend (between 2-3% of Play A&G spend[.]").

540. *See, e.g.,* GOOG-PLAY-000559379.R at -382.R and -384.R; GOOG-PLAY-000000807; GOOG-PLAY-000229696; GOOG-PLAY-005027813 (showing Hug-approved budget, developers and their expected 2020 Play spend, along with marketing, cloud credits, YouTube presence, and eSports tournaments incentives). Through providing such incentives, Google could gain a foothold through "Court[ing] Top Developers." *See* GOOG-PLAY-011269238 at -251, a February 2018 slide deck describing "Project Banyan, Hug and RSA/Play Kicker: Risk & Leakage Models.".

541. GOOG-PLAY-000559379.R at -382.R—383.R ("In a typical deal, Play reinvests [redacted] *See also* GOOG-PLAY-004119228.R at -237.R ("Effectively, GVP is a cross-Google deal structure where by [*sic*] Play takes [redacted] a developer would have owed Google and allows the developer to reinvest those dollars towards [redacted]

542. GOOG-PLAY-000000807 at -810-811.

543. GOOG-PLAY-000001976.

544. *Id.* ("[redacted] is therefore considering [whether] to launch their subscription service in an off-Play Webstore to get the economics they aspire.").

[redacted] in spend from 2019-22."[545] Google, aiming to "[m]itigate the risk" of [redacted] defection from Google Play, made an offer to [redacted] that involved revenue-sharing incentives and "reinvesting" customer spend into mutually beneficial marketing activities.[546] By April 2020, Google had offered [redacted] reinvestment[] on all SKUs."[547] Shortly thereafter, [redacted] signed a Project Hug agreement.[548]

226. Altogether, Google estimated that Project Hug resulted in [redacted] (2019-2022)," while also driving an [redacted] dollars in cross-platform revenue.[549] Google also noted that signed Project Hug developers had stopped "escalat[ing] about rev share to date" and were "leaning into Play & Google partnership."[550] In 2020, Google decided to double down and rolled out the Games Velocity Program 2.0, offering Project Hug-like benefits to the next 12 largest game developers.[551]

227. Google's "sim-ship" requirement that game developers release all games on the Play Store on the game's day of launch can be understood as a most-favored-nations ("MFN") clause foreclosing competing App stores from entering into exclusive arrangements with developers whereby, in return for a substantial payment, the developers agree to launch a title exclusively on a rival App store. As noted above, when employed by dominant platforms such as Google, MFNs have been recognized as impairing competition.[552] In this case, Google's monopoly power allowed it to enter into contracts precluding developers from offering high-quality exclusive content to rival app stores that might have been used by the app stores to attract a sufficiently large user base and compete more vigorously with the Play Store.[553] In a more competitive environment, developers would have had economic incentives to promote competition in the Android App Distribution market by offering high-quality exclusive content to rival app stores.

228. Pricing-parity MFNs preclude the supplier (developer) from pricing below the price it charges on the platform,[554] but MFNs can also dictate non-price terms such as product quality or timing that indirectly weaken price competition. Baker and Scott Morton explain that "[p]latform MFNs with greater scope and duration would be expected to have stronger anticompetitive effects and impose larger penalties[.]"[555] The scope of Google's equivalent to an

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545. GOOG-PLAY-000003283.R at GOOG-PLAY-000003308.R.

546. GOOG-PLAY-000001976 at GOOG-PLAY-000001976-GOOG-PLAY-000001977 ("As [redacted] has influence over a large portfolio of games developers that adds up to [redacted] of Play revenue, [redacted] would have a realistic opportunity to successfully launch an off-Play business which would result in a margin risk of [redacted] for Play." The GVP (Games Velocity Program) deal was designed to "[m]itigate the risk" of [redacted] defection. It included an offer to share revenue (percentage of [redacted] and [redacted] and to [redacted] a percentage of subscription spend into [redacted]

547. GOOG-PLAY-000003283.R at GOOG-PLAY-000003286.R.

548. GOOG-PLAY-003899355.R at GOOG-PLAY-003899360.R.

549. GOOG-PLAY-004146689.R at GOOG-PLAY-004146697.R.

550. *Id.*

551. *Id.* at -722.R.

552. *See, e.g.*, Baker & Morton, *supra.*

553. GOOG-PLAY-000929031 at 032-033.

554. A pricing-parity requirement creates an incentive for the seller not to offer low prices because any price discount must be offered to all covered buyers, which makes discounting more expensive and thus softens price competition. Baker & Morton, *Antitrust Enforcement Against Platform MFNs*, *supra*, at 2179-2180.

555. *Id*. at 2182.

MFN here can be measured by the share of the Play Store's revenue generated by participating Apps among U.S. customers. Using Google's transaction data, I estimate that the 21 developers that were part of Project Hug in 2019[556] accounted for 17.4 percent of all game-related App revenue and 14.6 percent of all App revenue on the Play Store in 2019. I also estimate that the [redacted] game developers that were part of Project Hug and the expanded Games Velocity Program 2.0 in 2020[557] accounted for [redacted] of all game-related App revenue and [redacted] of all App revenue on the Play Store in 2020. Put differently, Google's equivalent to an MFN prevented a potential or actual rival App store from preferentially or exclusively selling [redacted] of the most popular applications in 2020.

229. Deposition testimony supports the conclusion that potential competition was eliminated. According to Google's Mr. Koh, the "sim-ship" requirement eliminated one potential avenue of competition from Samsung's Galaxy Store,[558] preventing developers from launching a different version of their games on that App store. For this reason, Mr. Koh "viewed it as it mitigating our risk of losing out to competition" from Samsung and other competitors.[559]

230. Google's sim-ship requirement effectively prevented any rival App store from offering consumers major gaming titles at an earlier date or on an exclusive basis—preferences that could have helped rival App stores to gain a foothold with consumers and convince OEMs to pre-install a rival App store.[560] Once such a new App store was widely distributed, developers could have used that alternative distribution outlet to pressure Google to reduce its take rate in the Android App Distribution Market via the threat of steering. Thus, although the MFN equivalent here was not aimed directly at prices, it ultimately reduced price-based competition by eliminating the prospect of steering.

c. Google May Have Secured An Agreement To Eliminate Potential Competition from Facebook

231. As detailed below, I understand that Google may have secured a long-lasting commitment from Facebook not to deploy a competing App store by leveraging the threat of technically disrupting Facebook's updating capabilities. I am not opining on the existence of such an agreement. If the fact finder determines that Google and Facebook did reach such an agreement, it likely would have generated anticompetitive effects.

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556. List taken from GOOG-PLAY-000237798. Tencent is excluded from this list. GOOG-PLAY-000001976 ("Tencent is therefore considering to launch their subscription service in an off-Play Webstore to get the economics they aspire.").

557. The Project Hug developer list was taken from GOOG-PLAY-000237798, with [redacted] excluded, *supra*. The expanded GVP developer list is taken from GOOG-PLAY-004146689.R at -710.R.

558. Koh Dep. 364:9-365:4.

559. *Id*. at 366:2-367:16.

560. Google evaluated the revenue risks associated with various App stores if they decided to compete aggressively, and found that Hug [redacted] GOOG-PLAY-011269238 at -260 (Evaluating the "Yearly Revenue At Risk By 2022" based on whether the [redacted] and other developer stores gain more developers). *See also id*. at -271-276 (outlining various scenarios that each rival App store could pursue).

232. In 2016, Google observed that Facebook was using its preloaded apps on Samsung devices to update its own apps outside the Google Play Store.[561] I understand that this allowed Facebook to have install permissions for first- and third-party apps, meaning it could update and install apps without users receiving Google's unknown sources warning.[562] I also understand that the evidence will show that Google's "Project Wichita" studied Facebook's preloading efforts,[563] and resulted in the development of a feature initially named "Speedbump," and later renamed "VerifiedParent" or "VerifyParent."[564] Facebook complained that this feature disrupted Facebook's ability to update its own apps outside the Play Store by displaying a warning to users.[565] In emails to Google in April 2017, Facebook expressed the concern that Google was trying to sew fear, uncertainty, and doubt ("FUD") in an effort to induce Facebook users "to not accept our installer providing an update to our apps."[566] In a meeting between the companies on May 19, 2017, Facebook requested that Google exempt (or "whitelist") Facebook so that the warning would not be displayed to Facebook users.[567]

233. Google documents and testimony from Kirsten Rasanen, the Google Play Business Development executive responsible for direct management of the Play Store's relationship with [redacted] indicate that, following the May 19, 2017 meeting with [redacted] Google explored offering to whitelist [redacted] in exchange for [redacted] agreeing to limit its direct installation of apps outside the Play Store. [568] The documents suggest that if [redacted] appeared "hostile" to Google's proposal to "not under any circumstances do a direct install of 3p apps" outside the Play Store, then Google would "have a set of things we would do technically to stop this [distribution] from happening - rather than just threaten to pull the [redacted] app from the catalog."[569] A Google executive described this approach as "rolling the nukes up to the border."[570] Testimony from an Executive Vice President at Google, Purnima Kochikar, suggests that [redacted] and Google may have reached an agreement to the effect that [redacted] would not launch a third-party App store in exchange for Google refraining from imposing technical roadblocks involving installation or

561. GOOG-PLAY-007339480.R at -481.R ("Executive Summary" to "Project Wichita" presentation explaining that "Facebook has preloaded at least three Facebook apps on Samsung S7 devices," that "one or more of the apps likely has 'Install_Packages' permission," and that "Facebook is actively using these preloaded apps to install and update the core Facebook App (com.facebook.katana), circumventing Play, in some cases.").

562. *See* Bankhead Dep. 119:7-10 ("Q. Sure. The install permissions allowed Facebook to install third-party apps without getting any type of unknown sources warnings; is that right? A. That sounds correct.").

563. *Id. See also* GOOG-PLAY-003688820.

564. GOOG-PLAY-008216048 (email from Google Play Director of Product Management Paul Gennai explaining that Wichita "later became known as 'Speedbump,'" followed by an email from Kirsten Rasanen, who managed Play's relationship with Facebook, explaining that "Speedbump . . . later became VerifiedParent").

565. GOOG-PLAY-000333091; GOOG-PLAY-007339480.R at -494.R (Project Wichita presentation describing a "technical solution[]" to Facebook self-updating as "[t]hrow[ing] [a] dialogue box . . . if update from source other than the one that drove the install").

566. GOOG-PLAY-004452685 at -685.

567. GOOG-PLAY-000333220 at -221. Record evidence indicates that, at the same meeting, [redacted] disclosed to Google that it was using its preloaded apps to distribute apps outside the Play Store, by enabling users to directly install apps from ads in the [redacted] GOOG-PLAY-004698100.R at -102.R

568. GOOG-PLAY-004698100.R at -105.R ("Potential negotiation: . . . Use Alley-oop for all installs which Play will then update . . . But, we will whitelist you for Verify Parent so you can continue to use your updater to *update* Facebook apps only."); Rasanen Dep. 110:17-23 ("Q. Is it fair to say that Google explored the idea of white-listing [redacted] for purposes of Speed Bump, VerifyParent, in exchange for [redacted] limiting its direct install activity? . . . THE WITNESS: It is fair to say that that was a negotiation tactic considered.").

569. GOOG-PLAY-000840536.

570. *Id*.

update permissions.[571] Consistent with this, in August 2020, [redacted] executive [redacted] wrote in an email that "[W]e (FB) have also made verbal commitments to Google to not stand up a competitive App store…This was a way to maintain all of the 1P install and update permissions we wanted to have with the FB installer. While we could change our stance and decide to do 3P App stores, we should expect that Google will respond to maintain their control of App distribution."[572]

234. I understand that Google continued to seek and obtain [redacted] commitment not to compete in subsequent years. According to testimony from Google witnesses and record documents, in 2020 Google signed revenue sharing agreements that would have restricted the ability of some OEMs to preload [redacted] with installation and update permissions. According to this evidence, Google gave [redacted] waivers that allowed it to keep these permissions—but conditioned the waivers on [redacted] continuing to refrain from competing in third-party app distribution.[573]

235. Record evidence indicates that Google offered [redacted] a technology known as [redacted] to improve the rate at which users installed apps shown in [redacted] Ms. Rasanen testified that "[t]he goal of the [redacted] product was to -- yes, to make [redacted] want to cease their own distribution efforts."[575] Record evidence indicates that Google initially sought

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571. Kochikar Dep. 406:24-407:18 ("Q. But it's your understanding that [redacted] only had the ability to install first party apps? A. That's my understanding . . . Q. And it's your understanding that there was an executive verbal agreement with [redacted] regarding install and update permissions? A. Yes.").

572. METAEPIC_000015003 at -004 ("[W]e (FB) have also made verbal commitments to Google to not stand up a competitive App store and walked back from some 3P downloads trials we did a few years ago at Google's request. This was a way to maintain all of the 1P install and update permissions we wanted to have with the FB installer. While we could change our stance and decide to do 3P App stores, we should expect that Google will respond to maintain their control of App distribution."). *See also* GOOG-PLAY-005428116 (email from Play executive Purnima Kochikar to Facebook's Marc Shedroff explaining that his reference "to 3P installs" in the context of a discussion about Facebook's continued ability to update its own apps, "caused significant concern among Android leadership" because "[t]hey have been working under the assurance that FB has deprioritized/stopped 3P efforts"). *See also* Rasanen Dep. 110:25-111:6 (When asked if Google entered into such an agreement with Facebook, Rasanen testified, "I do not know. I do not know. I don't remember."); Shedroff Dep. 212:8-20 (When asked if Facebook limited its third-party app distribution efforts in order to preserve the ability to update its own apps, Facebook's Marc Shedroff testified that he did not know because "[i]t predates me joining the company, so it would be speculation for me to say."); Lagerling Dep. 100:3-16 (John Lagerling testified that he left Facebook in June 2017, did not recall participating in Facebook strategy meetings regarding how to approach Google with respect to Facebook's self-updating and third-party app install rights, and did not "have a lot of recollection around the reasoning internally" related to Facebook third-party app install "because at that time my focus was elsewhere."); Lockheimer Dep. 393:4-12 (Google's Hiroshi Lockheimer testified that he had no recollection of discussing Facebook's direct app installs within Google: "Q. . . . Do you recall any discussions at Google with respect to Facebook experimenting with direct app installs from its Facebook news feed? A. I don't recall. I mean, you're showing me a slide here that references that. You showed me what look like meeting notes that referenced us finding out from Facebook. So I can tell you those two things exist because you showed me those things but other than that, I don't recall.").

573. Kochikar Deb. 425:18-22 ("Q. So at a certain point did [redacted] and Google come to an agreement regarding [redacted] install permissions? A. Yes. [redacted] has agreed, I think, to focus more on the 1P and allow for Google solutions on 3P."); GOOG-PLAY-005428116 (email from Purnima Kochikar to [redacted] stating, in the context of Google giving OEM waivers, that Android leadership had "been working under the assurance that [redacted] has deprioritized/stopped 3P efforts" and asking [redacted] to "confirm that [redacted] is not pursue 3P installs outside of the [redacted] experiments").

574. GOOG-PLAY-007379918.

575. Rasanen Dep. 169:22-170:3.

to "[k]eep current agreement as is including clause prohibiting 3P APK distribution via any [redacted] apps distributed or updated by Google Play…while offering [redacted] an opportunity to test [redacted] When Facebook refused this offer, Ms. Rasanen wrote that "[w]e will go back to [redacted] and propose a [redacted] trial agreement. . . We will be clear that at the conclusion of the trial period, we will ask for a commitment from them to use Play to distribute all 3P apks in apps that use [redacted]

236. Google documents and testimony indicate that it offered [redacted] at significant cost to Google's own ad business. In August 2016 email, Paul Bankhead, Senior Director of Product Management for the Play Store, explained, "[T]he question is how best to structure [redacted] to motivate [redacted] to avoid going down that path [of installing 3P APKs]."[578] Mr. Bankhead compared [redacted] competing in App distribution to "a country who wants to go nuclear,"[579] and proposed that Google "give [redacted] something they want in exchange for slowing or stopping development of their nuclear program."[580] According to Mr. Bankhead Alley Oop was "essentially handing [redacted] billions of dollars of additional ad revenue and hurting [Google's] own ad business."[581]

237. Record evidence suggests that Google leveraged the ongoing negotiations and [redacted] trial periods in an attempt to slow [redacted] progress toward competing in App distribution. When negotiating to provide [redacted] with [redacted] on a trial basis in 2016, Google planned to threaten [redacted] with termination of the trial if it "continu[ed] down the path of 3P [app] distribution" during the trial period.[582] [redacted] used [redacted] over the course of two trial periods lasting six and nine months.[583] Deposition testimony indicates that [redacted]

576. GOOG-PLAY-009734977 at -978 ("Proposal: Keep current agreement as is including clause prohibiting 3P APK distribution via any [redacted] apps distributed or updated by Google Play (item 3a) while offering [redacted] an opportunity to test [redacted]

577. GOOG-PLAY-000083999 ("We will go back to [redacted] and propose a [redacted] trial agreement without the apk distribution term, but with rate limited access to the overlay flow with the goal of providing both sides data to understand the efficacy and value of the product. . . . We will be clear that at the conclusion of the trial period, we will ask for a commitment from them to use Play to distribute all 3P apks in apps that use [redacted]; GOOG-PLAY-006367390 (June 29, 2017 email from Kirsten Rasanen explaining that [redacted] is "[w]illing to continue testing [redacted]); Rasanen Dep. 204:9-16 ("Q. And as contemplated by this e-mail, did you, in fact, make clear to Facebook that at the conclusion of the trial period, Google would as for a commitment from them to use Play to distribute all third-party APKs and apps that use [redacted] A. I believe I did but I don't recall the specific conversation.").

578. GOOG-PLAY-007379918.

579. *Id.*; *see also* Bankhead Dep. 415:7-9 ("Q So in this analogy, the nuclear power is the ability to install third-party APKs? A Yes.").

580. GOOG-PLAY-007379918.

581. *Id.*

582. *See* GOOG-PLAY-009734977 at -979 ("Verbally signal to [redacted] that our intent is to help create a better user experience and to help them increase ad conversion. If we see that they are continuing down the path of 3P APK distribution, we may terminate this deal.").

583. Rasanen Dep. 151:12-152:3 ("Q. And then picking up on the next sentence, ultimately Google and [redacted] entered into an agreement permitting [redacted] to test [redacted] for six months; right? A. Yes. Q. And then the agreement was extended for another nine months? A. Yes. Q. And so in total, the agreement was in effect for a year and three months; is that correct? A. Yes. Q. And it's no longer in effect today; is that your understanding? A. That is my understanding. That's my understanding. I don't know if things have changed.").

currently uses [redacted] (now called "Last Mile Delivery") for a portion of its Android App installations.[584]

238. For the reasons given above, I conclude that Google's exclusionary Android App Distribution Market Restraints on App Developers were anticompetitive. In a more competitive but-for world, Google would have eliminated these anticompetitive restraints, and the Play Store would have competed on the merits with lower-priced App distribution channels.

4. Technical Barriers

239. I understand that Professor Schmidt finds that Google has imposed technical barriers that make it unnecessarily difficult for consumers to download Apps from rival App stores. I understand that Professor Schmidt explains that, in many cases, users must first locate the store on the Internet, then sideload the store, and then change a security setting on Android devices, which Google discourages by first creating default settings that block these downloads, and then, if the user attempts to change the setting to download an application, by displaying often misleading warnings regarding competing App stores.

240. For example, in 2016 to download the Amazon App store, a user had to complete a series of 19 steps, including selecting "Unknown Sources" within the user's security settings and navigating three separate security warnings.[585] The "Unknown Sources" label is ominous, with early versions warning users that downloading App stores would make your "[p]hone and personal data … more vulnerable to attack."[586] Google has used variations of this warning even for reputable stores like Amazon's.[587] I understand that Google has continued to use such warnings when a user attempts to install rival App stores.[588]

241. Google further frustrates the ability of consumers to customize their devices by imposing technical barriers that impact the downloading of Apps from outside the Google Play Store, including from developer websites. While Google Android technically permits sideloading, I understand that Professor Schmidt opines that Google has made it unnecessarily cumbersome by requiring sideloading to proceed through the "unknown sources" flow. I also understand that Google, over time, has increased the frequency with which a user encounters the "unknown sources" flow. In the past, a user would trigger the "unknown sources" flow when downloading a

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584. Karam Rough Dep. Tr. 179:16-180:1 ("Q. Do you know if [redacted] currently uses a version of [redacted] A. I believe they do for a percentage of traffic. Q. And when did [redacted] rebrand or get a new name to, [redacted] A. I am not sure. Q. Do you know if it was in the last – within the last year or so? A. That sounds about – not far off from that is my instinct.").

585. A Google presentation recognized the significance of this sideloading deterrent by documenting the 19 steps required to successfully install Amazon Underground. GOOG-PLAY-000297309.R at -311.R-314.R. I understand that this is confirmed by Professor Schmidt.

586. Blake Stimac, *How to sideload an App onto your Android phone or tablet*, GREENBOT (July 17, 2014), greenbot.com/article/2452614/how-to-sideload-an-app-onto-your-android-phone-or-tablet.html.

587. Jimmy Westenberg, *How to install the Amazon Appstore on your Android [Android 201]*, ANDROIDGUYS (Apr. 5, 2014), androidguys.com/tips-tools/install-amazon-app-store-android/.

588. According to one Google document, "App stores generally have relatively low malware install rates[.]" *See* GOOG-PLAY-004904016.R at -4032.R. According to the same document, some of Google's own software, such as Chrome, [redacted] *Id.* (showing, e.g., Chrome with a [redacted].

next section, I offer two models that can be used to estimate those reduced take rates in the Android App Distribution Market and in the In-App Aftermarket, respectively.

VI. THE CHALLENGED CONDUCT GENERATED ANTITRUST IMPACT

279. A key difference in the two relevant antitrust markets—the Android App Distribution Market being two-sided and the In-App Aftermarket being one-sided—allows for different methods for assessing impact or what take rates and consumer subsidies would prevail in each market without Google's Challenged Conduct. I discuss these two methods and their implications in turn. In Part VI.B, using a two-sided model developed by Rochet and Tirole, where the locus of competition is on the developer take rate, I show classwide impact for those members of the Damages Class in the Android App Distribution Market. In Part VI.C., using a one-sided model of price competition, I show classwide impact for members of the Damages Class in the In-App Aftermarket. In Part VI.E, again using the two-sided model developed by Rochet and Tirole, where the locus of competition is instead on the consumer subsidy, I show classwide impact for members of the Damages Class. In Part VII, I estimate aggregated damages to U.S. Consumers nationwide based on these impact models. In Part VIII, I describe a methodology for computing individual U.S. Consumers' damages.

280. My analysis differs from the standard regression analysis commonly used in many price-fixing matters to isolate the effects of anticompetitive conduct in a limited timeframe compared to a competitive market absent the challenged restraints. Because Google has imposed the Challenged Conduct in both the Android App Distribution Market and the In-App Aftermarket since those markets were originally formed, there is no pre-existing or post-conduct time period to use for purposes of standard regression analysis. Accordingly, I employ widely accepted economic models to determine take rates that would be charged in a hypothetical but-for world without the Challenged Conduct. Before introducing the models, I briefly explain how multi-homing (by customers and developers) and steering (by developers) would put downward pressure on take rates in the absence of the Challenged Conduct.

A. Multi-Homing and Steering Would Put Downward Pressure on the Take Rate That Google Imposes on App Developers

281. Google's Challenged Conduct has enabled Google to charge developers supra-competitive take rates in the Android App Distribution Market and the In-App Aftermarket. With its dominance in the Android App Distribution Market and consequent market power in the In-App Aftermarket, Google is able to extract a supra-competitive take rate on all paid App downloads and purchases of In-App Content. This is true even after Google's reduction in its take rates announced in March 2021 (from 30 percent to 15 percent on the first $1 million of developer revenue)[659] and for subscription payments after the first year as of January 1, 2018 (reduced to 15

659. Sameer Samat (Google Vice President, Product Management), *Boosting Developer Success on Google Play*, ANDROID DEVELOPERS BLOG (Mar. 16, 2021), android-developers.googleblog.com/2021/03/boosting-dev-success.html ("Starting on July 1, 2021 we are reducing the service fee Google Play receives when a developer sells digital goods or services to 15% for the first $1M (USD) of revenue every developer earns each year.") Although the new policy applied to all developers, the overall reduction in the take rate is less significant for larger developers, because it applied only to the first $1 million in revenue. For example, developer with $10 million in revenue would pay a 15 percent take rate on the first $1 million, and a 30 percent take rate on the remaining $9 million, which works out to an overall take rate of 28.5 percent.

percent).[660] The concepts of multi-homing and steering are critical to understanding how Google's contractual restraints with OEMs, developers, and mobile carriers work as an economic matter.

1. Multi-Homing

282. Multi-homing, as the name suggests, occurs whenever buyers or sellers on the opposite sides of a two-sided platform use more than one platform for the same or similar purpose. For example, many young Internet users have social media accounts on two or more social media platforms (e.g., Facebook and TikTok). Many ride-sharing drivers and riders have both Uber and Lyft on their phone, another form of multi-homing. Multi-homing is not exclusive to the digital world: People carry two or more credit cards in their wallets, and the stores they frequent accept more than one card, although anti-steering rules imposed by one of the most popular credit cards may inhibit card competition.[661]

283. In the context of this case, multi-homing exists to the extent consumers have App stores side-by-side on their mobile phone's home screens (if Google's conduct did not prevent consumers from having multiple App stores)—the adjacent placement is necessary so that multi-homing is equally convenient for consumers. When two platforms are sufficiently close substitutes in the eyes of buyers and sellers, multi-homing can lead to competitive outcomes that benefit both buyers and sellers.[662]

284. Multi-homing would occur absent the Challenged Conduct, as developers would be willing to distribute their applications through alternative App stores if they could achieve sufficient reach by doing so. And consumers would be willing to install the second App store on their home screens if (1) they could access their favorite Apps on a rival App store, and (2) if at least some of those Apps were available at a lower price on the second App store—a phenomenon that, in a competitive world absent Google's restrictions, would be made possible via steering.[663]

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660. Although Google decreased the take rate for subscription services from 30 percent to 15 percent in 2018, the decrease was only applicable after the first year. (It wasn't until January 1, 2022, that the take rate was reduced to 15 percent for all subscription services across the board). Google documents indicate that [redacted] of consumer spend on in-App purchases occurs within one year of the consumer's first purchase, which would have limited the effect of the 2018 policy. *See* GOOG-PLAY-007819776 at -909. Moreover, Google estimates in the lead-up to the announcement found only a $25 million revenue loss from the change, because only 23 percent of active subscriptions and 16 percent of revenue from subscriptions came after 12 months. *See* GOOG-PLAY-000446626.R at -629.R. Another Google analysis calculated the effective take rate resulting from the 2018 policy change at 28 percent. *See* GOOG-PLAY-001291233 at -251. In contrast, the competitive but-for world is one in which all developers would have enjoyed substantial and permanent reductions in the take rate and would be characterized by long-run equilibrium price adjustments to substantially lower developer costs flowing from substantially lower take rates. As a consequence, Google's reduction in the take rate for subscriptions is unlikely to provide an adequate natural experiment that could be used to accurately measure the extent to which consumers would have paid lower prices in the but-for world.

661. Even if there is multi-homing, restrictions can create less than a competitive outcome. *See, e.g.,* Kevin Caves & Hal Singer, *Competing Approaches to Antitrust: An Application in the Payment Card Industry*, 27(3) GEORGE MASON LAW REVIEW 823-861 (2020).

662. Susan Athey & Fiona Scott Morton, *Platform Annexation*, Stanford Inst. for Econ. Policy Research Working Paper 21-015 (March 2021).

663. Although my primary impact model focuses on price effects (over the take rate), it is possible that competition would occur on non-price quality dimensions as well. For example, a specialized App store could emerge that provided better discoverability features, forcing Google to compete on that dimension.

2. Steering

285. Steering can exist in any type of market, but in the context of the two-sided platform present in this case, steering would entail a developer charging differential prices to consumers based on which platform the consumer selects, from which to download an App. The developer's aim, if steering were allowed, would be to induce consumers to transact over a lower-cost platform.[664] Economists have shown that, in a platform setting, steering puts downward pressure on the prices charged by sellers (here, developers), and thus anti-steering restraints are almost certainly harmful to competition.[665] Indeed, Google was well aware of the power of steering to put downward pressure on take rates.[666] One Google document explains that developers attempting to provide consumers with alternative payment options [redacted]

286. Steering occurs regularly across platforms in other industries where there are no restrictions that prevent it. One example is the market for "daily deals"—or discounted prices on certain products or services on a specific day—offered by platform Apps like Groupon and Living Social. Empirical research has shown that in markets where there is platform competition, sellers on the sites offer more valuable promotions to buyers at lower prices relative to markets without platform competition.[668]

287. With multi-homing and steering—both conditions are necessary for competition to drive down prices to consumers—developers could, and would be incentivized to, charge a lower price for Apps to consumers who download Apps from a lower-cost App store platform. Consider a scenario in which a developer faced two take rates: Google's 30 percent rate and a rival App store's 15 percent rate. For simplicity, assume the developer charges $1 for downloading the App. In a world with multi-homing, the developer would have strong incentives to steer its customers to the lower-cost platform, as doing so would save it $0.15 per download (equal to the product of

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664. *See, e.g.,* Rochet & Tirole at n. 3 ("The occurrence of steering is easiest to visualize in those illustrations in which platforms charge per-end-user-transaction fees: The seller of a house or a B2B supplier may only list the house or the wares on the cheapest platform.").

665. *See, e.g.,* Benjamin Edelman & Julian Wright, *Price Coherence and Excessive Intermediation,* 130 Q. J. ECON. 1283 (2015); Rong Ding, *Merchant Internalization Revisited,* 125 ECON. LETTERS 347 (2014); Rong Ding & Julian Wright, *Payment Card Interchange Fees and Price Discrimination*, 65 J. IND. ORG. 39 (2017). For an overview of the intersection of multi-homing and steering, see Erik Hovenkamp, *Platform Antitrust*, 44 JOURNAL OF CORP. LAW 713 at 18-19 (2019) ("A second type of steering is undertaken by sellers on one side of a transaction platform. In most situations where buyers and sellers both multi-home, the buyer ultimately chooses the platform used to mediate his transactions. … Alternatively, the seller may vary the prices it charges in transactions over different platforms, applying a surcharge to those it disfavors (or, equivalently, a discount for transactions on its preferred platform). Such steering efforts were forestalled by the restraint at issue in *AmEx*, which is discussed further below.").

666. GOOG-PLAY-006829073.R at GOOG-PLAY-006829085.R.

667. GOOG-PLAY-007755618 at 5619 [redacted] *See also* GOOG-PLAY-011269238 at -287 (a Google slide that reads "App Stores need not be winner-take-all" at point 3, suggesting worry over multi-homing if other App stores gained a foothold).

668. Kim et al., *Two-sided platform competition with multihoming agents: An empirical study on the daily deals market*, 41 INFORMATION ECON. AND POLICY 36-53 (2017).

the 15 percent differential in take rates and $1). Indeed, the developer would be willing to offer up to a $0.15 reduction in the price of the App to steer its customers to the lower-cost platform. As more customers shift their downloads to the rival platform, Google would be forced to revisit its take rate; a lower Google take rate would in turn induce developers to lower their prices on the Play Store. I model this competitive dynamic formally in the following sections.

B. A Two-Sided Platform Model with Multi-Homing Shows That Google Would Be Compelled to Lower Its Take Rate from Developers in the Absence of Google's Android App Distribution Market Restraints

288. I start by analyzing the impact of the Challenged Conduct in the Android App Distribution Market. For this purpose, I use a model based on the one developed by economists Jean-Charles Rochet and Jean Tirole (winner of the Nobel prize in economics for, among other things, his pioneering work on monopolized industries) who formalized the economic framework for two-sided markets.[669] This framework has been widely cited by other economists.[670]

289. The model shows by how much Google's take rate on paid initial App downloads in the Android App Distribution Market would fall if the locus of competition occurs on the developer side of the platform once Google's multiple restraints and technical barriers are removed. The model shows what Google would charge developers in the presence of multi-homing and steering, which would occur in the absence of Google's exclusionary restraints. Although Google's exclusionary conduct was aimed at myriad potential entrants—including mobile carriers, OEMs, and developers—my analysis of a potential but-for world requires entry by only one viable rival App store platform. Although Google has consistently charged a take rate at (or very close to) 30 percent for the vast majority of consumer expenditures,[671] my analysis also takes account of Google's current take rates. For example, the take rate has been lowered from 30 to 15 percent for (1) subscription App renewals beginning January 1, 2018, and (2) transactions made for Apps and In-App purchases for a developer's first $1 million in annual sales beginning July 1, 2021.[672] I discuss the basic intuition behind this model and show how it can be readily adapted to the current setting.

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669. Rochet & Tirole, *supra*.

670. *See, e.g.*, Avi Goldfarb and Catherine Tucker, *Digital Economics*, 57 JOURNAL OF ECONOMIC LITERATURE 3-43 (2019); Joseph Farrell & Paul Klemperer, *Coordination and lock-in: Competition with switching costs and network effects,* in MARK ARMSTRONG AND ROBERT PORTER EDS., 3 HANDBOOK OF INDUSTRIAL ORGANIZATION (Elsevier 2007).

671. *See, e.g.*, Table 8, *infra*, Row 3 (showing that Google collected service fees in excess of [redacted] of consumer expenditures from 8/16/2016 – 5/31/2022).

672. The relatively few developers who paid reduced take rates in the actual world would also have paid take rates below the but-for level. Google's anticompetitive conduct resulted in a substantially inflated headline take rate of 30 percent, which is economically equivalent to inflating the list price of a product in an antitrust context. Customers that receive discounts from an inflated list price still incur antitrust injury because the discounts they receive are tied to the list price. *See, e.g.,* Hal Singer and Robert Kulick, *Class Certification In Antitrust Cases: An Economic Framework,* GEORGE MASON LAW REVIEW 1046, 1049 (2010) (explaining that U.S. Consumers are impacted even when they receive discounts relative to an inflated list price; here the list price is Google's headline take rate of 30 percent). Thus, even developers who paid reduced take rates in the actual world would have also paid lower take rates in the but-for world, and would have passed on some of the resulting savings to consumers. In Part VIII, I demonstrate how damages can be calculated for individual U.S. Consumers using common methods, taking into account the fact that a limited number of developers received discounts relative to Google's standard 30 percent take rate.

290. In the event that the factfinder concludes that the Android App Distribution Market and In-App Aftermarket are not two separate markets, I have performed alternative analyses which apply the two-sided market framework to a single, combined market. These analyses (presented Part VI.H and Appendix 4) contemplate competitive scenarios in which platforms compete for all transactions (both initial downloads and in-App purchases) in the aggregate. In Part VI.E, I present a model in which the locus of competition occurs on the consumer side.[673] In Appendix 4, I present a model in which the locus of competition occurs on the developer side of the platform, and a model in which competition occurs on both the developer and consumer sides of the platform.

1. The Platform Model in a Monopolized Setting

291. The two sides of the Android App Distribution Market are consumers of initial paid App downloads (buyers) and App developers (sellers). Google sets the commission it has charged developers for using the Play Store. Google does not charge consumers for accessing the Play Store and instead offers a small subsidy in the form of its loyalty points program, Google Play Points, effectively implying a small *negative* price (or subsidy) for consumers using the Play Store.[674] Importantly, while Google sets the commission charged to developers, developers set their own prices on App downloads.[675] As my extension of the Rochet-Tirole model illustrates, developers that can offer their Apps on an App store that charges a lower commission than Google will be incentivized to "steer" consumers to the alternative App store by charging lower prices on downloads in that alternative App store than they charge in the Play Store. In this way, consumers would also benefit from competition between App stores.

292. I first outline the classic two-sided market model in which a platform operator sets per-transaction platform prices on both sides of the market where the platform operator has a monopoly (the "foundational monopoly model"). I then demonstrate how this model is easily extended to the instant case, where Google sets a take rate or commission imposed directly on developers instead of a per-transaction price and provides a subsidy to consumers in the form of loyalty points (the "applied monopoly model"). A portion of the supracompetitive cost imposed on developers through the take rate is passed through to consumers (which I show in Section VI.D below). I then describe the foundational and applied models in a setting where there is platform competition.

a. The Foundational Monopoly Platform Model

293. The Rochet-Tirole model was developed in a situation in which the operator of the two-sided platform has a monopoly and sets per-unit prices on both sides of the market to sellers and buyers.

294. In the instant case, Google controls the substantial majority of all App downloads on Android-compatible mobile devices and can thus appropriately be thought of as a platform

673. The model presented in Part VI.E can also be applied if there are two relevant markets.

674. The subsidy referenced here is paid by Google to the consumer. The consumer still pays a positive price to the developer—albeit a lower one due to the subsidy.

675. Google limits prices to between $0.05 and $400.00 on the Google Play Store. Google - Play Console Help, *Supported locations for distributions to Google Play users,* support.google.com/googleplay/android-developer/answer/10532353?visit_id=637777015722462270-3131223409&rd=1.

monopolist. As a platform operator, Google has the ability to charge both buyers and sellers for using the Play Store.

295. Google's charge to consumers (buyers) can be thought of as Google's ability to charge for transactions, which I denote as P_B. As is typical for many two-sided markets, Google sets the consumer access price (in this case, a subsidy) near zero.[676] As for developers (sellers), Google charges a take rate, or percentage of sales, of up to 30 percent. The foundational model uses a per-unit transaction price on the seller side, which I denote as P_S, instead of a percentage take rate. In the foundational model, P_B and P_S should be understood as prices charged to consumers (buyers) and developers (sellers), respectively, for a transaction made on the platform. These prices are distinct from the price of the actual product being purchased (App downloads). Maximizing profit (by taking the derivative of the profit equation with respect to both prices) leads to an optimal pricing rule under a two-sided monopoly platform:

(V.1) $$\frac{P_B + P_s - C}{P_B + P_s} = \frac{1}{\varepsilon_B + \varepsilon_S}$$

where $\varepsilon_B, \varepsilon_S$ are the price elasticities of demand for the buyer and seller, respectively.[677] The left-hand side of this expression represents the platform operator's per-unit margin. In maximizing its profit, the monopolist will choose to set platform prices to buyers and sellers according to their price elasticities of demand, and C represents the platform operator's incremental cost of executing a transaction. As observed in Rochet and Tirole 2003, when expressing the total price charged by the platform ($P = P_B + P_S$) and the combined elasticity with respect to both sides of the market faced by the platform ($\varepsilon = \varepsilon_B + \varepsilon_S$), Equation (V.1) simplifies to what is known as the Lerner index, the standard inverse elasticity formula:

(V.2) $$\frac{P - C}{P} = \frac{1}{\varepsilon}$$

This expression is widely recognized in economic theory and suggests that firms with pricing power increase prices until the markup of price over marginal cost is equal to the inverse of the firm's own-price elasticity.[678]

b. Application of the Two-Sided Monopoly Platform Model to the Play Store

296. I now adapt the Rochet-Tirole model set out above to fit the current circumstances. I accommodate three key features that distinguish the adapted model from the foundational monopoly model described above. *First*, Google charges a take rate to developers on the Play Store as a percentage of developers' revenues rather than a per-unit price. *Second*, as I demonstrate later in Part VI.D using standard economic principles, the take rate imposed on developers is passed

676. *See, e.g.,* John M. Newman, *Antitrust in Zero-Priced Markets: Foundations*, 164 PENN LAW REVIEW 149-206 (2015). The consumer also pays for access by sharing her data with the platform operator.

677. Rochet & Tirole at 996-997. In mathematical terms, the elasticity of demand is defined as the percentage increase in demand divided by the percentage decrease in prices.

678. *See, e.g.,* Landes & Posner at 937 (1981).

through at least in part to consumers. This pass-through results in product prices that will be affected by the take rate. *Third*, through its Play Points loyalty program and other promotions, Google offers a subsidy (a negative platform price) on the consumer side.

297. I define the take rate t as the commission charged by Google to developers for using the platform (typically 30 percent with the exceptions discussed above). The per-unit amount paid to Google by the developer is equal to the take rate multiplied by the product price, which I will denote as S. For example, if an App is priced at $S = \$10$ and the take rate is 30 percent, Google retains 0.3*$10 = $3. Indeed, this arrangement is analogous to setting platform prices $P_S = tS$. It is important to note that the *product* price S is also affected by the take rate, because the take rate represents a cost to developers, a significant portion of which is typically passed on to consumers in the form of higher product prices. I estimate the rate of pass-through in Section VI.D and denote it here with the symbol γ. The pass-through rate is equal to the portion of an increase in costs incurred by developers (including those from increased commissions), which is passed through to consumers in the form of higher product prices. For example, if costs to a developer increase by one dollar, a pass-through rate of 0.90 means that product prices for consumers increase by $0.90. Allowing for this relationship, Equation (V.1) becomes:

(V.3)
$$\frac{P_B + tS - C}{tS + t^2 S'} = \frac{1}{\varepsilon_{B,t} + \varepsilon_{S,t}}$$

where $\varepsilon_{B,t}$ and $\varepsilon_{S,t}$ are price elasticities of demand for transactions from buyers (consumers) and sellers (developers), respectively, now taken with respect to the take rate t, which takes the place of the platform price, and $t^2 S'$ is an additional term which accounts for the effects of the take rate on the product price.[679] Appendix 3 contains a derivation of Equation (V.3).

2. The Platform Model in a Competitive Setting

a. The Foundational Competitive Model

298. When competition to the platform monopolist is introduced, both buyers and sellers can connect to more than one platform, which, as discussed above, is known as multi-homing.[680] With multi-homing, the monopolist loses some pricing power, resulting in a lower equilibrium take rate. The competitive pressure on the take rate occurs through two channels: (1) the platform's

679. S' represents the amount by which the product price S changes when there is a change in the take rate. Appendix 3 contains further details regarding this term.

680. Rochet & Tirole at 991-992 ("In a number of markets, a fraction of end users on one or the two sides connect to several platforms. Using the Internet terminology, we will say that they 'multihome.' For example, many merchants accept both American Express and Visa; furthermore, some consumers have both Amex and Visa cards in their pockets. Many consumers have the Internet Explorer and the Netscape browsers installed on their PC, and a number of Web sites are configured optimally for both browsers.").

incentive to attract sellers, and (2) sellers' ability to steer buyers by way of lower product (in this case App) prices.[681]

299. All else equal, sellers will prefer to use the platform that charges a lower seller-side platform price (P_S), assuming that the alternative platform is roughly comparable and therefore attracts a significant base of consumers. A competing platform under this assumption can therefore attract sellers away from a rival by offering a lower platform price. This first effect on platform prices, namely downward pressure in the face of competition, is analogous to the familiar forms of price competition that occur in countless industries.

300. A second effect stems from sellers' incentive to avoid a higher take rate, all things equal, while having access to the most buyers possible. Because sellers here set their own product prices, they can "steer" buyers to a platform by offering lower product prices on that platform. Steering is facilitated when a rival platform charges a lower platform price, because a seller using the platform with a lower platform price has a price differential available to lower prices and steer customers.

301. In a competitive platform setting, the platform's optimal pricing rule from Equation (V.1) becomes:[682]

(V.4)
$$\frac{P_B + P_S - C}{P_B + P_S} = \frac{1}{\varepsilon_{OB} + \varepsilon_{OS}}$$

This formula now reflects the buyers' "own-brand" elasticity, ε_{OB}, and the sellers' "own-brand" elasticity, ε_{OS}. Own-brand elasticity is the change in demand for a given platform due to an increase in the price of transacting on that particular platform. This elasticity varies from the elasticity in the monopoly setting due to the presence of competition from rival platforms. In a monopoly setting, a consumer may choose not to transact in the face of a price increase but will not have the option of transacting on an alternative platform. In a competitive setting, a consumer may choose not to transact at all or may choose to transact on a competing platform. The presence of a competitive option suggests a greater elasticity of demand relative to that of the monopoly setting.

302. The own-brand elasticities cause the denominator on the right-hand side of Equation (V.4) to increase relative to the denominator in Equation (V.1). This higher denominator leads to a lower margin on the left-hand side, which implies lower equilibrium platform prices ($P_B + P_S$) in the presence of competition.

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681. *Id.* at 1001 ("This increases demand for Platform 1 in two ways: The platform attracts new merchants…and 'steers' former multihoming merchants.").

682. *Id.* at 1004. I derive this expression by replacing market demand faced by the platform operator (in the monopoly setting) with residual demand, where residual demand is defined as market demand minus demand that is met by the platform's rivals. Rochet and Tirole model competition in the form of a duopoly and express the seller side own-brand elasticity as $\varepsilon_{OS} = \varepsilon_S/\sigma$, where σ is a single-homing index. I use the more general notation to show that in my extension of the model, I am agnostic to the number of competing platforms faced by Google, as long as there is at least one rival. Appendix 3 provides details regarding this derivation.

b. Application Of The Two-Sided Competitive Platform Model to The Instant Case

303. Applying the competitive model to this case results in an expression analogous to Equation (V.4):

(V.5) $$\frac{P_B + tS - C}{tS + t^2S'} = \frac{1}{\varepsilon_{OB,t} + \varepsilon_{OS,t}}$$

As in Equation (V.3), the platform prices P_s on the left side of the expression has been replaced with its take rate analogue (tS), and there is an additional term in the denominator which accounts for the effect of a new take rate on product prices. The platform price elasticities on the right-hand side have also been replaced with their take rate analogues, now reflecting the introduction of competition ($\varepsilon_{OB,t}$ is own-brand elasticity of demand taken with respect to the take rate on the buyer side, and $\varepsilon_{OS,t}$ is own-brand elasticity of demand taken with respect to the take rate on the seller side). As in the foundational model, the competitive elasticity terms imply a lower take rate in this equation. Table 5 summarizes these equations, comparing the foundational framework with the extension that allows for a percentage take rate. Details of how these expressions are derived are in Appendix 3.

TABLE 5: EQUILIBRIUM EXPRESSIONS OF THE ROCHET-TIROLE MODEL APPLIED TO THE INSTANT CASE

Scenario	Foundational Model	Applied Model
Monopoly	$\frac{P_B + P_s - C}{P_B + P_s} = \frac{1}{\varepsilon_B + \varepsilon_S}$ (Eqn. (V.1))	$\frac{P_B + tS - C}{tS + t^2S'} = \frac{1}{\varepsilon_{B,t} + \varepsilon_{S,t}}$ (Eqn. (V.3))
Competitive	$\frac{P_B + P_S - C}{P_B + P_S} = \frac{1}{\varepsilon_{OB} + \varepsilon_{OS}}$ (Eqn. (V.4))	$\frac{P_B + tS - C}{tS + t^2S'} = \frac{1}{\varepsilon_{OB,t} + \varepsilon_{OS,t}}$ (Eqn. (V.5))

3. Calibrating the Model and Required Inputs

304. Once the model is "calibrated" in the sense that it relates the observed variables in the monopoly setting in Table 5 and solves for the unobserved variables, the model can be used to project Google's take rate in a competitive setting. I demonstrate impact by proceeding in two steps. *First*, I calibrate the Applied Model in the monopoly scenario by estimating inputs in the observed setting in which Google wields monopoly power in the Android App Distribution Market, thus satisfying Equation (V.3). The model's inputs are informed entirely by paid Apps in the Android App Distribution Market, as those are the only Apps that are priced and thus exhibit an observable own-price elasticity of demand. *Second*, I use the competitive inputs—namely, the take rate elasticities of demand—to determine a competitive take rate in a competitive (but-for)

world, thus satisfying Equation (V.5). Data obtained from Google and other sources can be used in the applied monopoly and competitive models. In the descriptions below, I use the superscript ^{M} to denote inputs to the monopoly model (Equation (V.3)) and the superscript ^{C} to denote inputs to the competitive model (Equation (V.5)). My sources and methods for obtaining the monopoly scenario inputs shown in Equation (V.3) are:

- P_B^M is equal to the price "charged" by Google to consumers for transactions made on its platform in the monopoly scenario. Through its Play Points loyalty program and other promotions, Google effectively charges a small negative price to consumers. As it does in the actual world, Google maximizes its profits with respect to all Apps collectively, not App-by-App. Therefore, I use Google's average subsidy across all Apps, not individual subsidy amounts, to calculate P_B^M. I compute the value of this subsidy as the sum of all promotions paid by Google for paid Apps downloaded in the Android App Distribution Market divided by the total quantity of paid Apps downloaded in the Android App Distribution Market, per Google's transaction records.

- t^M is equal to the observed take rate, computed as the sum of all revenue retained by Google in the Android App Distribution Market divided by the sum of total revenue spent by consumers in the Android App Distribution Market. t^M therefore represents the portion of consumer spending that Google "takes" from the developer. I calculate t^M prior to extracting Google's promotional payments to consumers (promotional payments are captured by P_B^M).

- S^M is equal to the average price charged for Apps in the Android App Distribution Market (for paid App downloads only) in the monopoly setting. In the monopoly model, S^M is total consumer expenditure (prior to receiving promotions from Google) in the Android App Distribution Market divided by the total quantity of paid Apps downloaded, as observed in Google's transaction records. As it does in the actual world, Google would maximize its profits with respect to all Apps collectively, not App-by-App. Therefore, I use Google's average App price across all Apps, not individual App prices, to calculate S^M.

- Marginal cost C represents the incremental cost incurred by Google in executing a transaction. I refer to Google's financial data to infer this value, which suggests that transaction fees and direct costs that Google records for the Play Store (excluding content costs) are approximately [redacted] percent of consumer expenditures.[683]

- γ is equal to the change in the App price S charged to consumers with respect to a change in developers' costs (including the cost imposed on developers through Google's take rate), also known as the pass-through rate. This parameter is discussed in detail in Part VI.D,

683. I estimate that Google's direct costs of sales and direct operating expenses for the Play Store (excluding irrelevant content costs for movies, television, and books) to be [redacted] percent of consumer expenditures on the Play Store for the period 2016 – 2021. In addition to transaction fees, the Play Store's direct costs of sales includes content costs, customer support, and other costs. I include all of these except content costs; these are costs Google incurs for sales of books, movies, and television, and are not part of the relevant markets here. I also include all direct operating expenses, which include payroll & stock-based compensation, as well as the following non-payroll costs: professional services, advertising and promotional expenses, equipment, and other expenses (travel and entertainment, office and related expenses). *See* work papers for this report.

where I estimate its value at approximately 91 percent (91.1 percent). This value implies that an increase in the take rate that adds $1.00 in extra cost to a developer will cause an increase in the price of the App product of $0.91. Mathematically, the pass-through rate is:

(V.6)
$$\gamma = \frac{\text{change in revenue}}{\text{change in costs}}$$

- S'^M represents the change in the product price resulting from a small change in the take rate. I solve for S'^M in terms of the take rate and pass-through rate: $S'^M = \frac{\gamma}{(1-t^M\gamma)}S^M$. Appendix 3 contains a derivation of this expression.

- $\varepsilon_{B,t}^M$ and $\varepsilon_{S,t}^M$ are the take-rate elasticities of demand for transactions in the Android App Distribution Market from consumers and developers, respectively, in the presence of Google's monopoly. $\varepsilon_{B,t}^M$ reflects the change in the quantity demanded by consumers for Android App Distribution Market transactions associated with a change in the take rate in a monopoly setting. A change in the take rate affects the price at which App products (paid App downloads and purchases of In-App Content) are set via pass-through, which in turn affects consumer demand. $\varepsilon_{S,t}^M$ reflects the change in the number of paid Apps sold by developers in response to a change in the take rate in a monopoly setting. Given the other inputs to the monopoly model, the value of $\varepsilon_{B,t}^M + \varepsilon_{S,t}^M$ is implied by Equation (V.3). Further description of these inputs is included in Appendix 3.

I hold inputs C and γ fixed between the monopoly and competitive scenarios. My sources and methods for obtaining the remaining inputs to the competitive scenario expression shown in Equation (V.5) are:

- P_B^C is equal to the price "charged" by Google to consumers for transactions made on its platform in the competitive scenario. Holding the buyer-side platform price fixed in proportion to the product price yields: $P_B^C = \left(\frac{P_B^M}{S^M}\right) * S^C$.[684]

- t^C is equal to the but-for (competitive) take rate. I calculate the but-for take rate by finding the value that satisfies Equation (V.5) given the remaining inputs.[685]

- S^C is the price of paid App downloads that developers would charge in a competitive scenario. S^C can be inferred if the pass-through rate is known by using Equation (V.6). In particular, plugging in the change in revenue and change in costs associated with the monopoly versus a competitive scenario:

684. In Section VI.E, I model a scenario in which the locus of competition occurs on the buyer-side platform price P_B, resulting in a but-for buyer-side platform price that differs from the observed, monopolistic price.

685. If all the inputs to Equation (V.5) are known except for the take rate, I can solve for the take rate that satisfies the equation.

(V.7)
$$\gamma = \frac{\text{change in revenue}}{\text{change in costs}} = \frac{(S^M - S^C) * \text{quantity}}{(t^M S^M - t^C S^C) * \text{quantity}}$$

This expression can be further simplified and re-arranged to express the competitive price S^C in terms of other inputs:

(V.8)
$$S^C = S^M \frac{1 - \gamma t^M}{1 - \gamma t^C}$$

- S'^C represents the change in the product price resulting from a small change in the take rate in the competitive setting. I solve for S'^C in terms of the take rate and pass-through rate: $S'^C = \frac{\gamma}{(1 - t^C \gamma)} S^C$. Appendix 3 contains a derivation of this expression.

- $\varepsilon^C_{OB,t}$ and $\varepsilon^C_{OS,t}$ are the "own-brand" take-rate elasticities of demand for transactions in the Android App Distribution Market for consumers and developers, respectively, in the presence of competition. $\varepsilon^C_{OB,t}$ reflects the change in the quantity demanded by consumers for Android App Distribution Market transactions—from Google in particular, hence, "own-brand"—associated with a change in Google's take rate. Relative to its monopoly analogue, this parameter reflects a scenario where Google faces competition from rival platforms; as such, the parameter will be greater in magnitude than the monopoly elasticity, because the presence of a competitor allows easier defection by consumers in the presence of a price increase from Google, and thus more sensitivity. $\varepsilon^C_{OS,t}$ reflects the change in the quantity of transactions demanded by developers—on the Play Store in particular, hence "own-brand"—in response to a change in the take rate, again in the presence of platform (App store) competition. To inform the but-for competitive elasticities as shown in the denominator of Equation (V.5), $\varepsilon_{OB,t} + \varepsilon_{OS,t}$, I draw from the economics literature, empirical evidence of industries that have shifted from monopoly to competition. I conservatively estimate that Google's take rate elasticities shift from a value of 2.14 (in the monopoly setting, as calculated using Equation (V.3)) to 2.58 in the competitive setting. I arrive at 2.58 using the relationship between own-brand elasticity and market demand elasticity, and under the conservative assumption that Google maintains a 60 percent market share with an inelastic supply response from Google's rivals.[686] These inputs are defined mathematically in Appendix 3.

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686. Similar to Part VI.C, *infra*, I use the relation $E_g = \frac{E_M}{S_g} + \frac{E_S(1-S_g)}{S_g}$ where E_g is Google's own-brand elasticity, E_M is market elasticity, S_g is Google's market share, and E_S is the elasticity of supply of Google's rivals (conservatively set to zero). *See* Landes & Posner at 939-940. I conservatively assume Google maintains a 60 percent market share in a competitive market and that $E_S = 0$. AT&T saw its market share decline to approximately 60 percent by the early 1990s after losing its monopoly. *See, e.g.,* Simran Kahai, David Kaserman & John Mayo, *Is the "Dominant Firm" Dominant? An Empirical Analysis of AT&T's Market Power*, 39 JOURNAL OF LAW & ECONOMICS 499-517 (1996). This implies that the buyer price elasticity of demand changes from 5.391 in the monopoly setting (estimated using Equation V.11) to 8.99 = 5.391/0.6 in the competitive setting, which translates to a competitive take rate elasticity of 2.289, and that the seller price elasticity of demand changes from 0.140 (calculated using Equations

4. Competitive Take Rate Results

305. Table 6 summarizes the results of calculating inputs as described above. As seen below, Table 6 uses both the Google Transaction Data and the App Revenue Metrics data. I estimate that in the but-for world, platform competition results in a competitive take rate of [redacted] percent, down from its observed value of [redacted] percent in the actual world. This result is calculated from Equation (V.5), by finding the value for t that satisfies the equation, given all other inputs. As Table 6 shows, at a pass-through rate of $\gamma = 91.1$ percent, the resulting but-for average price of paid App downloads in the Android App Distribution Market is [redacted], down from the observed price of [redacted] (net of Google's promotional expenditures to consumers). This difference results in an average overcharge to consumers of [redacted] per paid App download (equal to [redacted] which demonstrates impact, and results in aggregate damages of [redacted] (equal to [redacted] paid App download transactions) as a result of Google's restrictions in the Android App Distribution Market, across the Class Period (August 16, 2016, through May 31, 2022) for the U.S. As explained below, there are additional damages and impact in the In-App Aftermarket.[687]

V.3 and A.22) to 0.233 = 0.140/0.6, which translates to a competitive seller take rate elasticity of 0.293 (see Appendix 3 for details on the relation between the price elasticities of demand and take rate elasticities of demand). The sum total of both competitive elasticities is then equal to 2.289 + 0.293 = 2.58.

687. In the event that proof of pass-through is not necessary under the law, I have been asked to calculate damages based on the full reduction in the take rate in the but-for world. I do so in Part VII.A below.

TABLE 6: ANDROID APP DISTRIBUTION MARKET IMPACT AND DAMAGES
(U.S., 8/16/2016 – 5/31/2022)

Actual World (Monopoly, Eqn. (3))

#	Input	Description	Value	Source/Notes
[1]		Consumer Expenditure (US; Before Discounts)	[redacted]	GOOG-PLAY 005535886; Google Transaction Data (US Consumers)
[2]		Google Revenue (US; Before Discounts)		*Id.*
[3]		Google Promotional Expenditures (US)		*Id.*
[4]		Android App Distribution Market (Paid) Transactions (US)		*Id.*
[5]=[1]/[4]	S^M	App Product Price Before Discounts		Calculated
[6]=[2]/[1]	t^M	Take Rate		Calculated
[7]=-[3]/[4]	P_B	Buyer-side Platform Price		Calculated
[8]=[5]+[7]	$S^M + P_B$	App Product Price Net of Discounts		Calculated
[9]	C	Marginal Cost		GOOG-PLAY-000416245; GOOG-PLAY-010801682
[10]	γ	Pass-through Rate		Estimated (See Table 13)
[11]	$\varepsilon^M_{B,t} + \varepsilon^M_{S,t}$	Take Rate Elasticities of Demand		Calculated (Eqn. (V.3))

But-For World (Competitive, Eqn. (5))

#	Input	Description	Value	Source/Notes
[12]	S^C	App Product Price	[redacted]	Calculated (Eqn. (V.8))
[13]	t^C	Take Rate		Calculated (Eqn. (V.5))
[14]=([7]/[5])*[12]	P_B	Buyer-side Platform Price		Calculated
[15]=[12]+[14]	$S^C + P_B$	App Product Price Net of Discounts		Calculated
[16]=[9]	C	Marginal Cost		GOOG-PLAY-000416245; GOOG-PLAY-010801682
[17]=[10]	γ	Pass-through Rate		Estimated (See Table 13)
[18]	$\varepsilon^C_{OB,t} + \varepsilon^C_{OS,t}$	Take Rate Elasticities of Demand		Economic theory/empirical studies
[19]=[8]-[15]		Consumer Savings Per Transaction		Calculated
[20]=[19]*[4]		**Aggregate Damages**		Calculated

Notes: Expenditures, revenues, and unit totals are limited to transactions on smartphones and tablets. I calculated these using GOOG-PLAY 005535886 (Google App Revenue Metrics Data) over the period [redacted] I calculated Google promotional expenditures as follows: For the period 8/2016 – 1/2017, I summed the [redacted] fields from the App Revenue Metrics data. For the period 2/2017 – 5/2022, I relied on the Google Transaction Data, which provides a breakdown of each revenue distribution from one party to another once a transaction occurs. I calculated the difference between the

initial purchase buyer-to-developer revenue distribution, which is approximately equal to the "price_per_unit" before discounts are applied, and the pre-tax consumer spend net of discounts. Correspondence from Google suggests that this calculation takes promotional dollars earned through Play Points into account. *See* Letter from Brian C. Rocca, Morgan Lewis, to Gregory Arenson, Kaplan Fox & Kilsheimer LLP, in re Google's Transactional data (January 14, 2022) ("These discounts [the difference between the "price_per_unit" and the "sale_revenue_pricing.pre_tax_amount.micros" fields] may reflect promotions from Google, promotions from developers (that are co-funded by developers and Google), and Google Play loyalty point redemptions."). To be conservative, I also aggregated Play Points earned across all transactions, assigned each point a dollar value of $0.01, and added this to the promotional expenditures total. *See* Shelby Brown, *Google Play Points Could Help You Save Money. Here's How*, CNET (Feb. 21, 2022), *available at* https://www.cnet.com/tech/services-and-software/google-play-points-could-help-you-save-money-heres-how/ ("A $1 Google Play credit costs 100 Play Points"). *See also* Letter from Brian C. Rocca, Morgan Lewis, to Gregory Arenson, Kaplan Fox & Kilsheimer LLP, in re Google's Transactional data (October 11, 2021) at 61-62 (explaining that the "transactional_points" field "contains non-negative integers that indicate points earned due to the transaction" and is only populated from 2017 onward "consistent with when Play Points launched.").

306. Developer-specific take rates can be computed by applying the proportion of discounts granted in the actual world to the competitive but-for take rate. For example, suppose that the overall take rate is 30 percent in the actual world. Suppose a developer has an actual take rate of 29 percent (one percentage point below the overall rate). Suppose that the overall but-for take rate is 23 percent. In this example, the developer's but-for take rate would be calculated as [23 percent] x [29 percent]/[30 percent] = 22.2 percent. The pass-through rate γ (which I set equal to 91.1 percent for this analysis) may also vary across categories of Apps. Differential pass-through rates can be readily estimated (see Part VI.D.3) and inserted into the model to determine competitive but-for take rates that vary across App category, as illustrated in Part VII below. U.S. Consumers who made purchases in those App categories were accordingly subject to overcharges; lower take rates associated with consumer purchases in the but-for world would be passed through in the form of lower App prices relative to the actual world.

5. Analysis Of Similar Platforms Corroborates My Competitive Take Rates For Initial App Downloads

307. The framework described above demonstrates the economics of two-sided platforms and allows estimation of a take rate for the Android App Distribution Market in a competitive but-for world. This model is particularly useful in the present context where the Challenged Conduct has been inherent to Google's business practices since approximately the inception of the Play Store, preventing a "before, during, and after" comparison. A comparative analysis, presented here, can be used to corroborate the results from the two-sided market model. In this section, I review take rates found in similarly situated, two-sided digital platforms. I focus on take rates from platforms where there are no (or fewer) anticompetitive restraints similar to those imposed by Google in the instant case, and the fundamentals of platform economics (connecting two sides of a market) are present. From these examples, several conclusions emerge:

- Platforms facing more competitive conditions compete by lowering their take rates;
- Customer mobility, which hinges on the presence of substitutes and the absence of switching costs, puts downward pressure on the take rate via steering; and
- Take rates in competitive environments reflect the diminishing value offered by the platform over time following the initial matching of buyer and seller.

a. The ONE Store

308. South Korean wireless carrier SK Telecom Co. spearheaded the launch of the ONE Store, a competing mobile App store in 2016.[688] The scale of this effort to compete with Google is a testament to the barriers to entry: it involved cooperation among the three largest Korean wireless carriers (SK Telecom, KT, and LG Uplus), as well as Naver, Korea's largest search engine.[689] These parties were able to achieve near-universal availability in South Korea of the rival App store by having it pre-installed on every Android handset provided by these three companies.[690] The ONE Store achieved a 14.9 percent share of payment volume among App stores in South Korea.[691] The ONE Store has managed to gain share of payment volume in large part thanks to its significantly lower take rates, as well as an aggressive points system for consumers. The ONE Store has a headline 20 percent take rate for developers, which is lowered to five percent if the developer uses its own payment platform.[692] ONE Store's CEO credits its lower take rates compared to Google's 30 percent rate with increasing ONE Store's presence in its domestic market and increasing the number of users purchasing App products (both paid App downloads and purchases of In-App Content).[693] In October 2020, ONE Store announced a 50 percent discount on commissions for small developers (those with revenue less than 5 million won per month).[694]

309. The ONE Store has been identified by Google as a competitive risk due to its lower take rate.[695] The ONE store originally charged a 30 percent commission from its launch in March 2016, and cut its take rate to the 20 percent level (five percent if developers provide their own payment platform) in July 2018 to compete against Google.[696] Developers can now (setting aside any restrictions by Google) steer their customers to the lower-cost platform via discounting prices to consumers for Apps. This episode demonstrates that multi-homing competition among App store platforms engenders competition along the take-rate dimension.

310. The scale of the alliance of the three largest wireless carriers in South Korea enabled the ONE Store to overcome the prohibitive restrictions to competition imposed by Google. Google's revenue-sharing agreements with carriers were designed to prevent such a launch of a

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688. Lim Young-sin & Choi Mira, *Korea's home-grown integrated App market One Store on global outreach,* PULSE (Nov. 13, 2019), pulsenews.co.kr/view.php?year=2019&no=938924.

689. *Id.*

690. GOOG-PLAY-000005203.R at -264.R ("Pre-installed on (virtually) every phone sold in SK[.]").

691. Kim Eun-jung, *Korean App market ONE store eyes global alliance to compete with Google*, YONHAP NEWS AGENCY (Dec. 1, 2019), en.yna.co.kr/view/AEN20191128004700320.

692. *Id.* ("ONE store cut the rate to 20 percent in July 2018. For App providers with their own payment platform, the firm only charged 5 percent for its service.").

693. *Id.* ("The rate cut not only helped the firm [the ONE Store] to expand its presence in the domestic market but also improved profitability with an increased number of paid users, he said. . . With the additional firepower, Lee said ONE store will bolster efforts to create an alternative global App store capable of competing with Google and enhance the App industry ecosystem. 'A monopolistic market is not healthy for both industry players and consumers,' Lee said. 'We need more competition, not only in the domestic market but also on the global scale.'").

694. ET Telecom.com, *South Korea's App market ONE store grows amid Google's Play store policy row* (Feb. 21, 2021), telecom.economictimes.indiatimes.com/news/south-koreas-app-market-one-store-grows-amid-googles-play-store-policy-row/81135498.

695. *See, e.g.,* GOOG-PLAY-000005203.R at -215.R. *See also* GOOG-PLAY-000445443.R at -451.R.

696. Kim Eun-jung, *Korean App market ONE store eyes global alliance to compete with Google*, *supra*.

competing App store, particularly in the United States.[697] An internal Google presentation notes that this form of competition, involving a coalition of carriers, is "[u]nlikely in the US, given market share distribution and competition amongst carriers."[698]

b. Aptoide

311. Aptoide, another App store operating worldwide, assesses a maximum take rate of 25 percent[699] and in some cases charges a take rate as low as ten percent.[700] These take rates encourage developers to steer their customers to Aptoide's lower-cost platform. This strategy has paid off; Aptoide presently has over 300 million users worldwide.[701] Aptoide's growth is nevertheless limited by Google's restrictions—for example, consumers cannot download Aptoide through the Google Play Store and instead must go through the cumbersome side-loading process.[702] Moreover, developers are also barred from any form of steering—that is, informing consumers using the Google Play Store that they can use Aptoide for some or all of their transactions.[703]

c. Amazon

312. Although Amazon's Appstore maintained a "headline" take rate of 30 percent, after factoring in discounts to developers and consumers, deposition testimony from Amazon executive Donn Morrill confirms that the Amazon Appstore's effective take rate for 2018-2021 on Google Android devices was approximately ten percent.[704] Mr. Morrill also testified that Amazon sometimes "subsidized the development of the app" and offered other financial incentives to encourage developers to distribute their Apps through the Amazon Appstore.[705] Amazon

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697. *See, e.g.,* GOOG-PLAY-007315383 ("We take a much needed belt and suspenders approach to our Search and Play contracts to include both OEM's and carriers. In many regions, the carriers drive the preloads for phones and tablets on Android devices."). Carriers knew this. GOOG-PLAY-001055565 ("As we discussed, we are committed to not fragmenting the market. The goal is to use your master, global market to attract developers and publish content…the 'store' or channel they would see is a subset of the market made for them, but the broad market is still available at the same level of access as before."). *See also* GOOG-PLAY-001143425 ("To belay any concerns, we are absolutely not building another market.").

698. GOOG-PLAY-002011285.R at -289.R.

699. *See* Aptoide, *For Developers*, en.aptoide.com/company/developers ("Get a minimum of 75% payout rate on in-App purchases in comparison to 70% or even 50% you get with other App distributors.").

700. *See* Revenue Share, Catappult App Distribution Console, docs.catappult.io/docs/distribution-and-revenue-share.

701. *See* Aptoide, *About Us,* en.aptoide.com/company/about-us ("Aptoide is the game-changing Android App Store. With over 300 million users, 7 billion downloads and 1 million Apps, Aptoide provides an alternative way to discover Apps and games, with no geo-restrictions and one of the best malware detection systems in the market.").

702. Aptoide, *How to download and install Aptoide?,* en.aptoide.com/company/faq/how-to-download-install-aptoide.

703. *See* Google – Play Console Help, *Understanding Google Play's Payments policy*, support.google.com/googleplay/android-developer/answer/10281818?hl=en#zippy=%2Ccan-i-distribute-my-app-via-other-android-app-stores-or-through-my-website%2Ccan-i-communicate-with-my-users-about-alternative-ways-to-pay%2Ccan-i-communicate-with-my-users-about-promotions-on-other-platforms ("Within an app, developers may not lead users to a payment method other than Google Play's billing system unless permitted by the Payments policy. This includes directly linking to a webpage that could lead to an alternate payment method or using language that encourages a user to purchase the digital item outside of the app.").

704. Morrill Dep. 86:16-88:11 (reviewing AMZ-GP_00002471, a spreadsheet showing Amazon Appstore revenue from Android devices).

705. Morrill Dep. 73:5-74:20.

announced in June 2021 that it would reduce its headline take rate from 30 percent to 20 percent for small developers with less than $1 million in revenues, similar to other platforms.[706] Financial data produced by Amazon confirms that the Amazon Appstore's aggregate take rate across all device types, after factoring in discounts to developers and consumers, was 17.1 percent from 2015 – 2021.[707] For Google Android devices, after factoring in discounts to developers and consumers, Amazon's take rate was just ten percent from 2018 – 2021.[708]

313. Amazon has offered significant subsidies on the consumer side. Mr. Morrill testified that consumer subsidies known as "Amazon Coins" contributed to lowering the Amazon Appstore's effective take rate to approximately ten percent between 2018 and 2021.[709] Mr. Morrill testified that Amazon Coins provide consumers with a direct subsidy of up to 20 percent of the price of an App or In-App Content.[710] Google's 2017 "Amazon Competitor Deep Dive" indicates that Amazon was discounting Amazon Coins up to 15 percent and discounting purchases of In-App Content for Android games up to 30 percent.[711] The Amazon Appstore's consumer subsidies on Google Android devices came to over 19 percent of consumer expenditure from 2018 – 2021.[712]

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706. Sarah Perez, *Amazon's Appstore lowers its cut of developer revenue for small businesses, adds AWS credits*, TECHCRUNCH (June 17, 2021), techcrunch.com/2021/06/17/amazons-Appstore-lowers-its-cut-of-developer-revenue-for-small-businesses-adds-aws-credits/.

707. Equal to $1.283 billion in net revenue divided by $7.512 billion in consumer expenditure. *See* AMZ-GP_00005729 (P&L statement for the Amazon Appstore across all device categories for 2015 – 2021). Aggregate consumer expenditure for 2015 – 2021 comes to $7.512 billion (equal to sum across "OPS" row). Aggregate net revenue for 2015 – 2021 comes to $1.283 billion (equal to sum across "Net Revenue" row)). *See also* Morrill Dep. 97:7-11 ("This is a spreadsheet that's essentially a profit and loss statement for the Amazon Appstore across all device categories from the period 2015 to the period 2021.")

708. Morrill Dep. 87:10-25 ("Q. What is represented by that 10%? A. For the years in question, that is the net revenue to Amazon, again, accounting for discounts for those years. Q. Thank you. And just to come full circle to my original question, what approximately was the actual commission rate the Amazon Appstore received for transactions on Android from 2018 to 2021?...A. As calculated here, roughly 10%."). *See also* AMZ-GP_00002471 (Spreadsheet with Amazon Appstore financial data. The 'Summary_4' tab reports Gross Order Product Sales ("OPS") on third party ("3P") devices totaling $861 million for 2018 through 2021. Amazon' revenue over the same time period comes to $86.38 million, or 10.0 percent). *See also* Morrill Dep. 84:8-11 ("A. If your question is relative to non-Amazon produced mobile devices running Android, that is represented by the 3P line.")

709. Morrill Dep. 89:8-90:19 ("Q. And are discounts offered to customers part of what brings down that 30% rate? A. Discounts offered to customers, that's right. Q. What kinds of discounts does Amazon offer to customers who are shopping in its Amazon Appstore? A. Sure. So Amazon has what I would call a loyalty/discount program called Amazon Coins, which is a prepaid virtual currency, before the days of crypto, that allowed customers to buy the Coins at a various discount schedule and then transact on the Amazon Appstore using those Coins at a full value. Q. What's the advantage to a user, if any, of making a purchase using Amazon Coins instead of using a regular currency like U.S. dollars? MR. MUNDEL: Objection, form. A. Sure. The more -- the more Coins they buy in a given transaction the larger the discount to the customer up to a point. And then, again, they can use those Coins to transact full value transactions in the app. So at the end of the day it's a monetary discount. Q. How much of a discount can a user get by using Amazon Coins? MR. McINTYRE: Objection, form. A. It's varied over the Coin program duration, but my understanding is the discount caps out I believe at 20% today at the largest purchase level.").

710. *Id.* Mr. Morrill confirmed that Amazon Coin subsidies are funded by Amazon. *Id.* at 91:4-11.

711. GOOG-PLAY-000879194.R at -204.R.

712. *See* AMZ-GP_00002471 (Spreadsheet with Amazon Appstore financial data. The 'Summary_4' tab reports Gross Order Product Sales ("OPS") on third party ("3P") devices totaling $861 million for 2018 through 2021. The "Net OPS (net of discounts)" over the same time period comes to $695 million, yielding a discount percentage of [$861 million - $695 million]/$861 million = 19 percent). *See also* Part VII.C below.

According to a 2020 Amazon document, of the "many initiatives focused on distribution…[o]nly Coins has succeeded as a value proposition for the 3P [third party] Appstore[.]"[713]

d. PC Game Platforms

314. Despite not being a participant in the Android App Distribution Market, video game distribution platforms on PCs are similar to mobile App distribution platforms in that they also connect developers of software applications to consumers without requiring a particular console (like an Xbox or PlayStation).[714] The three dominant platforms through which PC games are bought and sold are Steam, Epic, and Microsoft.[715] Indeed, Google has noted that a 20 percent take rate would bring "Play rev share in line with upper end of desktop gaming stores."[716] The Epic Games Store was launched in December 2018 with a take rate of 12 percent.[717] Microsoft announced a reduction from 30 percent to 12 percent for games sold through its store, beginning August 1, 2021.[718] Effective October 2018, Steam also announced a take-rate reduction from 30 percent to a tiered system: 30 percent for the developer's first $10 million in revenue, 25 percent for sales between $10 and $50 million, and 20 percent for sales more than $50 million.[719] Discord, a PC game platform monitored by Google, imposes a ten percent revenue share.[720]

e. PC App Stores

315. Effective August 1, 2021, Microsoft charged a 12 percent take rate for consumer non-game Apps sold in the Microsoft Store (on devices other than Xbox and those using Windows 8), reduced from 15 percent.[721] Importantly, these commissions only apply when the developer is

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713. AMZ-GP_00002484, at 2488.

714. Take rates for video games played on consoles such as Xbox and Playstation may reflect the cost recovery of the hardware.

715. Steam is estimated to control roughly three quarters of PC gaming sales, followed by Epic (between two and 15 percent) and Microsoft. *See, e.g.,* Kyle Orland, *Humble Bundle creator brings antitrust lawsuit against Valve over Steam*, ARS TECHNICA (Apr. 30, 2021), arstechnica.com/gaming/2021/04/humble-bundle-creator-brings-antitrust-lawsuit-against-valve-over-steam/.

716. GOOG-PLAY-000542516.R at -529.R.

717. Epic Games, *The Epic Games store is now live* (Dec. 6, 2018), www.epicgames.com/store/en-US/news/the-epic-games-store-is-now-live ("The Epic Games store is now open, featuring awesome high-quality games from other developers. Our goal is to bring you great games, and to give game developers a better deal: they receive 88% of the money you spend, versus only 70% elsewhere. This helps developers succeed and make more of the games you love.").

718. Tom Warren, *Microsoft shakes up PC gaming by reducing Windows store cut to just 12 percent*, THE VERGE (Apr. 29, 2021), www.theverge.com/2021/4/29/22409285/microsoft-store-cut-windows-pc-games-12-percent.

719. Brittany Vincent, *Valve Introduces New Revenue Split Changes For Steam Sales,* VARIETY (Dec. 3, 2018), variety.com/2018/gaming/news/valve-revenue-split-changes-1203078700/.

720. GOOG-PLAY-007329076 at -084.

721. Microsoft Store, *App Developer Agreement Version 8.7* (Effective July 28, 2021), query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE4OG2b ("Fifteen percent (15%) of Net Receipts for any Apps (and any In-App Products in such Apps, including) that are not listed in Section 6(b)(iii) below. ii. For all Net Receipts generated on or after August 1, 2021: Twelve percent (12%) of Net Receipts for any Games (and any in-App Products in such Games) that are not listed in Section 6(b)(iii). iii. Thirty percent (30%) of Net Receipts for: 1. all Apps and In-App Products acquired by Customers in the Microsoft Store on an Xbox console and billed to such Customers on a non-subscription basis; 2. all Games (and In-App Products in Games) acquired by Customers in the Microsoft Store on an Xbox console; and 3. all Apps and In-App Products acquired by Customers in the Microsoft Store on Windows 8 devices; or Microsoft Store on Windows Phone 8 devices.").

using the Microsoft commerce platform to "support the purchase of your App or any in-App Products" (analogous to Google's billing system).[722] Also as of August 1, 2021, Microsoft charged a *zero* percent take rate for non-game Apps downloaded through the Windows 11 Store if the developer chose to use its own or a third-party commerce platform to facilitate in-App purchases.[723] More specifically, the Microsoft Store charges game developers 12 percent of revenue; non-game App developers pay 15 percent of revenue if they use Microsoft platform for their in-App transactions, but zero percent if they do not:

> Many developers love the Microsoft Commerce platform because of its simplicity, global distribution, platform integration and its competitive revenue share terms at 85/15 for Apps and 88/12 for games. Starting July 28, App developers will also have an option to bring their own or a third party commerce platform in their Apps, and if they do so they don't need to pay Microsoft any fee. **They can keep 100% of their revenue**."[724]

316. The Microsoft PC App store faces competition from direct downloads—consumers can easily discover a new application on the Internet and download it to the personal computer without using Microsoft as an intermediary. Given the competition from direct App downloads, Microsoft only charges a take rate when it performs the services of matchmaking—connecting the consumer to the app—and billing services are provided.

f. Other Examples

317. Additional examples of take rates more competitive than Google's abound in other, similarly situated industries with two-sided platforms. In independent online publishing, one of the leading platforms, Substack, which brings together writers and readers, takes a ten percent commission from writers, recognizing the low switching costs: "Moving one's email list away from Substack is simple, so the firm lets writers keep 90% of their revenues."[725] This ease of mobility increases writers' elasticity of supply, which puts downward pressure on the take rate. Revue, a competitor to Substack now owned by Twitter, charges only a five percent take rate.[726] Google's Chrome web store, which provides extensions, themes, and Apps associated with its

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722. *Id.* at 13-14 ("Commerce Platform Requirements. Purchases made on a third-party commerce engine are not subject to the Store Fee, but are still required to comply with our Certification Requirement.").

723. Giorgio Sardo, General Manager – Microsoft Store, *Building a new, open Microsoft Store on Windows 11*, MICROSOFT WINDOWS BLOGS (Jun. 24, 2021), blogs.windows.com/windowsexperience/2021/06/24/building-a-new-open-microsoft-store-on-windows-11/.

724. *Id.* (emphasis added); *see also* Alex Hern, *Microsoft to let developers keep all their Windows App store revenue*, THE GUARDIAN (June 25, 2021), theguardian.com/technology/2021/jun/25/microsoft-let-developers-keep-all-windows-app-store-revenue. ("As part of the shift to Windows 11, unveiled on Thursday, the company will allow developers to use their own payment systems on Apps they sell through the Windows store. Those who do will not have to pay a penny to Microsoft."). Thus far, Microsoft has declined to unbundle its billing system for game developers: "A different set of rules apply for game developers: their share is lower, at 12%, but they will not be given the option of using their own payment processors." *Id.*

725. The Economist, *The new rules of the 'creator economy'*, (May 8, 2021), economist.com/briefing/2021/05/08/the-new-rules-of-the-creator-economy.

726. Max Willens, *Cheat sheet: Twitter's acquisition of Revue heats up the battle of the inbox*, DIGIDAY (Jan. 27, 2021), digiday.com/media/cheat-sheet-twitters-acquisition-of-revue-heats-up-the-battle-of-the-inbox/ ("Revue will remain a separate brand, but Twitter will provide the resources to make Revue more competitive with other newsletter platforms; the commission Revue takes on all consumer revenue has been reduced to 5%, half of what Substack charges. All of the Pro features for Revue will be freely available to all Revue users as well. Twitter will also help Revue hire more people across research, design and engineering.").

browser, charges a five percent take rate, recognizing the value of attracting developers who might otherwise produce content for other browsers.[727] Take rates for online retail from vendors such as Amazon, eBay, and Etsy range from eight to fifteen percent with a small additional lump sum on the order of $0.30-$0.99.[728]

318. Table 7 offers a non-comprehensive summary of take rates in comparable competitive digital platform environments. Google's competitive but-for take rate from my two-sided platform model of [redacted] percent is corroborated by rates charged by competitive mobile App stores (18 to 25 percent), and is conservative compared to the take rates imposed by other platforms in more competitive industries. Finally, take rates of 15 percent [redacted] offered by Google pursuant to LRAP (and similar programs) also provide a reasonable approximation of the but-for take rate. Record evidence shows that LRAP offered a 15 percent take rate to induce premium subscription video streaming services with viable non-Google billing options (such as [redacted] and others) to adopt Google Play Billing in their Apps.[729] It therefore provides a valid competitive benchmark take rate for developers with take rates at (or close to) Google's standard 30 percent take rate in the actual world (that is, the vast majority of developers).

727. D. Melanson, *Google makes Chrome Web Store available worldwide, adds in-App purchases and flat five percent fee,* ENGADGET (May 11, 2011), www.engadget.com/2011-05-11-google-makes-chome-web-store-available-worldwide-adds-in-app-pu.html.

728. *See, e.g.,* Hung Truong, *Compare 9 Online Marketplace Fees* (Sept. 18, 2018), sellerzen.com/compare-9-online-marketplace-fees.

729. GOOG-PLAY-000578299.R at -301.R. *See also* Defendants' Responses and Objections to Developer Plaintiffs' First Set of Interrogatories at 13 ("Google maintains several developer programs that lower the service fee earned by Google on Apps and in-App purchases distributed by those developers on Google Play. Programs that U.S. developers participate in include "Living Room Accelerator Program" ("LRAP"), LRAP++, Audio Distribution Accelerator Program ("ADAP"), and Subscribe with Google ("SwG").") Google created LRAP for developers "who had video subscription Apps" to encourage them to help "build up [Google's] android living room experience," including to integrate a product known as "Cast" into their mobile Apps which "would then allow their content to be seen on TVs" and to integrate with Google Play billing. *See* Rosenberg Dep. 261:11-262:4. Google offered a [redacted] percent take rate to induce premium subscription video streaming developers such as [redacted] and others to adopt Google's billing products in their Apps. *See, e.g.,* GOOG-PLAY-000338849.R at -888.R; GOOG-PLAY-004714797; GOOG-PLAY-004717237; Defendants' Responses and Objections to Developer Plaintiffs' First Set of Interrogatories at 14-15; GOOG-PLAY-0006998204.R at -206.R. Further, under the LRAP++ program, Google has offered take rates of [redacted] (*see* GOOG-PLAY-000442329 at -345—346; GOOG-PLAY-004717237) and [redacted] (see GOOG-PLAY-000338849.R at -888.R; GOOG-PLAY-006998204.R at -206.R).

TABLE 7: BENCHMARK TAKE RATES

Category	Benchmark		Comparable Take Rate
Mobile App Stores	(1)	Aptoide	10-25%
	(2)	ONE Store	5-20%
	(3)	Amazon	18%
PC App Stores	(4)	Microsoft (non-games)	12-15%
PC Games	(5)	Steam (Valve)	20-30%
	(6)	Epic	12%
	(7)	Microsoft Store	12% effective 8/1/2021
Online Retail	(8)	Amazon	8-15% + $0.99/item or $39.99/month
	(9)	eBay	12.55% + $0.35
	(10)	Etsy	8% + $0.45
	(11)	Google	0% (previously 5-15%)
	(12)	Poshmark	20% (for over $15, $2.95 flat fee for under $15 sale)
	(13)	Walmart	6-15%
Online Publishing	(14)	Substack	10% + credit card fee
	(15)	Revue (Twitter)	5%

Sources: (1) Aptoide – Catappult, *Revenue Share*, docs.catappult.io/docs/distribution-and-revenue-share (2) Kim Eun-jung, *Korean App market ONE store eyes global alliance to compete with Google, supra*; GOOG-PLAY-007329076 at -084 (showing a 20 percent take rate, originally at 30 percent); (3) Derek Strickland, *Apple's 30% App Store commission is 'supracompetitive,' court declares*, TWEAKTOWN (Sept. 11, 2021), tweaktown.com/news/81567/apples-30-app-store-commission-is-supracompetitive-court-declares/index.html. (showing Amazon's effective take rate of 18.1%); (4) Microsoft Store, App Developer Agreement Version 8.7, *supra;* (5) Brittany Vincent, *Valve Introduces New Revenue Split Changes For Steam Sales*, *supra*; (6) Epic Games, *The Epic Games store is now live*, *supra*; (7) Tom Warren, *Microsoft shakes up PC gaming by reducing Windows store cut to just 12 percent*, *supra*; (8) Amazon, *Let's talk numbers*, sell.amazon.com/pricing; (9) eBay, *Understanding selling fees,* pages.ebay.com/seller-center/get-started/seller-fees.html; (10) Etsy, *Sell,* www.etsy.com/sell (Etsy charges a $0.20 listing fee. When a product is sold, they charge a 5% transaction fee, paired with a 3% + $0.25 payment processing fee); (11) Google Merchant Center Help, *New 0% commission fee for selling on Google through Shopping Actions in the US* (July 23, 2020), support.google.com/merchants/answer/9977875?hl=en; Bryan Falla, *Google Shopping Actions Commission Rates*, GODATAFEED (Oct. 22, 2019), godatafeed.com/blog/google-shopping-actions-commission-structure; (12) Poshmark, *What are the fees for selling on Poshmark,* support.poshmark.com/s/article/297755057?language=en_US; (13) Walmart Marketplace, *Referral Fees,* marketplace.walmart.com/referral-fees/; (14) Substack, *Going Paid,* substack.com/going-paid; (15) Tom McKay, *Twitter Wants to Be Substack Now*, GIZMODO (Jan. 26, 2021), gizmodo.com/twitter-wants-to-be-substack-now-1846136057.

C. Removing Google's In-App Aftermarket Restrictions Would Put Downward Pressure on the Take Rate Google Imposes on Developers for In-App Content

319. Relative to the value provided by the developer, the value that the Play Store contributes by matching a consumer with an App dissipates over time. That is because once a consumer has found an App on the Play Store, the match has been made. Any value added through

the purchase of In-App Content is added entirely by the developer. Google's own documents recognize this.[730]

320. I understand that all of the In-App Aftermarket services that developers are currently forced to use from Google (owing to Google's In-App Aftermarket restrictions) can actually be performed by a third party or the developer itself completely independently of Google. For example, there exists a well-established industry of competitive payment processors in the business of facilitating online transactions.[731]

321. In the competitive but-for world without Google's restrictions, developers could choose their own provider of services in the In-App Aftermarket. Alternatively, developers would be able to offer consumers the choice of selecting from an array of competitive options to provide In-App Content.[732] Elementary economics dictates that this would place downward pressure on Google's take rate, pushing it closer to the marginal cost of providing any services associated with In-App Content. Developers having the ability to steer consumers to lower-cost competitors would reinforce this downward pressure, an outcome that Google has modeled in Project Basecamp.[733] I use standard economic methods to conservatively estimate the extent to which Google's take rate for services in delivering In-App Content would fall when Google's restrictions are removed.

1. A Standard Economic Model of Competition in the In-App Aftermarket

322. To the extent that a competitive In-App Aftermarket would be characterized by homogenous commodity services (payment for and distribution of In-App Content) offered by various competitive rivals with few barriers to entry or expansion, standard economic principles prescribe that Google would be unable to charge a premium for these services.[734] If Google attempted to charge developers anything in excess of the competitive market price for In-App Aftermarket services, then developers would switch to a competitor providing identical services at lower cost, rendering Google's attempted price increase unprofitable.[735] Thus, to the extent that

730. *See, e.g.,* GOOG-PLAY-003335786.R at -805.R (describing Google's declining contribution to perceived value over time as applied to games).

731. *See, e.g.,* Rob Clymo, Brian Turner, and Jonas DeMuro, *Best payment gateways of 2022*, TECH RADAR (Aug. 22, 2022), www.techradar.com/best/best-payment-gateways; *see also* Table 10 below (listing various competitive payment processors).

732. To comply with recent legislation in South Korea, the Play Store now allows developers to offer South Korean users the choice between Google Play Billing and alternative in-app billing systems. Whenever a user selects an alternative billing system, the take rate for that transaction is reduced by four percentage points. *See, e.g.,* Play Console Help, *Changes to Google Play's billing requirements for developers serving users in South Korea*, support.google.com/googleplay/android-developer/answer/11222040. This is not a competitive market outcome, and instead reflects Google's ongoing monopoly power, through which Google has effectively replicated the Aftermarket Tie-In, by maintaining a high take rate in the In-App Aftermarket even when an alternative billing system is used. The same holds for Google's recent initiative to introduce user choice billing in European Economic Area countries, Australia, India, Indonesia, and Japan. *See* Abner Li, *Google Play opens developer sign-ups for third-party 'User Choice Billing'*, 9TO5 GOOGLE (Sep. 1, 2022), 9to5google.com/2022/09/01/google-play-user-billing-sign-up/. It would be economically irrational for Google to voluntarily relinquish its monopoly power and the profits that come with it.

733. *See* Part VI.D.2 below; *see also* GOOG-PLAY-006829073.R at GOOG-PLAY-006829085.R (assessing "Dev incentive to steer user choice").

734. *See, e.g.,* MANKIW at 268-284.

735. *Id.*

the competitive In-App Aftermarket is characterized by competition for a commoditized service, Google's equilibrium take rate in the In-App Aftermarket would fall towards the marginal cost of serving that market. As explained below, my economic model of the In-App Aftermarket conservatively allows Google to charge a substantial markup above marginal cost, even in a more competitive world.

323. Record evidence shows that Google's 30 percent take rate in the In-App Aftermarket cannot be justified by the costs of serving that market. As early as 2009, Google recognized that "30% is an arbitrary fee > the transaction cost to GOOG (2%)" and noted that "in competitive landscape may drive developers away from platform."[736] In another document, Google contemplated consumers choosing a competitive payment processor, described the "Core Issue [:] 30% is too high,"[737] and showed "market rates" for payment processing, including "PSPs [Payment Service Providers] that focus on simplicity and ease of integration," such as Stripe and PayPal, which charged "30c + 2.9%."[738] The same Google document calculated Google's average cost of payment processing at just [redacted] percent of customer spend for the top 5,000 developers. Google's estimate of its own payment-processing costs are below corresponding charges for two competitive payment processors (Stripe and Adyen).[739] Another Google document reports that transaction costs came to [redacted] percent of consumer spend in the first five months of 2021.[740]

324. Financial data produced by Google allow me to estimate the Play Store's global transaction costs as a percentage of global customer spend in the In-App Aftermarket and the Android App Distribution Market (Google's financial data do not distinguish between the two markets).[741] Even if I conservatively include all the direct costs of sales that Google records for the Play Store (excluding irrelevant content costs for movies, television, and books), as well as all direct operating expenses, I calculate all of these costs came to [redacted] percent of consumer expenditures on the Play Store for the period 2016 – 2021.[742] Accordingly, Google's cost of providing In-App Aftermarket services can be conservatively estimated at [redacted] percent of consumer expenditures.[743] This implies that Google's standard 30 percent take rate vastly exceeds

736. GOOG-PLAY-004630018.R at GOOG-PLAY-004630024.R.

737. GOOG-PLAY-006829073 at GOOG-PLAY-006829079.

738. GOOG-PLAY-006829073.R at GOOG-PLAY-006829097.R.

739. *Id.* at GOOG-PLAY-006829076.R (showing Google's average [redacted] percent of consumer spend, compared with 3.1 percent for Ayden and 6.2 percent for Stripe. These calculations exclude DCB [Direct Carrier Billing] and GC [Google Cloud]). When DCB and GC are included, Google estimates that its payment processing costs are [redacted] for 2,300 out of the top 5,000 developers, and [redacted] for the vast majority of developers. *Id.* at GOOG-PLAY-006829075.R.

740. GOOG-PLAY-007617587 ("Summary" tab); *see also* "FOP Cost Rates by country" tab (showing country blended rate of [redacted] percent for the United States).

741. *See, e.g.,* GOOG-PLAY-000416245. Because these are global financial data, they are not comparable to the revenue statistics in Table 6 above and in Table 8 below, which are limited to the United States.

742. In addition to Transaction Fees, the Play Store's Direct Costs of Sales includes Content Costs, Customer Support, and Other. I include all of these except Content Costs; these are costs Google incurs for sales of books, movies, and television, and are not part of the relevant markets here. I also include all Direct Operating Expenses, which include Payroll & Stock-based Comp (SBC), as well as the following Non-Payroll costs: Prof Services, A&P, Equipment, and Other (T&E, Office & Related). *See* work papers for this report.

743. Google's cost of providing In-App Aftermarket services is certainly no more than fifteen percent of consumer expenditures, the rate that Google charges to all subscription Apps, effective January 1, 2022. *See* Samat, *Evolving our business model to address developer needs, supra* ("To help support the specific needs of developers

even a conservatively high estimate of its marginal costs [redacted] percent of revenues), confirming that Google is exercising market power.

325. Google may argue that it would have retained some brand loyalty in the In-App Aftermarket, conferring a degree of pricing power in a competitive world, and thus a deviation from homogenous-product competition contemplated above. In that case, standard economics shows that Google's profit-maximizing price for In-App Aftermarket services would be determined by Google's firm-specific price elasticity of demand (as well as marginal costs).[744] The firm-specific demand elasticity is the percentage decrease in demand for Google's In-App Aftermarket services resulting from a one percent increase in price.[745] Google's profit-maximizing price for In-App Aftermarket services is given by the standard inverse elasticity formula, shown in the equation below.[746]

$$(P-C)/P = 1/E_g \qquad \text{(V.9)}$$

where E_g represents Google's firm-specific demand elasticity for In-App Aftermarket services, P represents the price for In-App Aftermarket services, and C represents Google's marginal cost of providing In-App Aftermarket services. It bears noting that this elasticity of demand for Google's In-App Aftermarket services (Google Play Billing) is different from the elasticities of demand used in the two-sided model of the Android App Distribution Market for the Play Store.

326. As explained in Landes and Posner's seminal paper, Google's firm-specific demand elasticity is related to the market demand elasticity as follows:[747]

$$E_g = E_M / S_g + E_s (1 - S_g) / S_g \qquad \text{(V.10)}$$

Above, E_M is the market demand elasticity for In-App Aftermarket services—that is, the percentage decrease in the market-wide quantity demanded resulting from a one percent market-wide increase in price. The term E_s is the elasticity of supply of Google's rivals—that is, the percentage increase in the quantity supplied by Google's rivals, given a one percent increase in Google's price. Finally, S_g is Google's market share. For example, if Google's market share is 100 percent ($S_g = 1$), the equation collapses to $E_g = E_M$. In that scenario, Google's firm-specific elasticity is the same as the market elasticity, because Google would be a monopolist (in the strict economic sense of being literally the only supplier). In contrast, when Google's market share falls below 100 percent, its firm-specific demand elasticity exceeds the market demand elasticity. By the standard inverse-elasticity formula in equation V.9 above, Google's profit-maximizing price under competition is lower than the monopoly price for In-App Aftermarket services.

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offering subscriptions, starting on January 1, 2022, we're decreasing the service fee for all subscriptions on Google Play from 30% to 15%, starting from day one.").

744. *See, e.g.,* Landes & Posner at 939-940.

745. *Id.*

746. *Id. See also* Jerry Hausman & Greg Leonard, *Efficiencies from the Consumer Viewpoint,* 17(3) GEORGE MASON LAW REVIEW 707, 709 (1999) [hereafter Hausman & Leonard].

747. Landes & Posner at 944-945.

327. In the actual world, Google's share of the In-App Aftermarket is close to 100 percent,[748] because Google has prevented competitive entry by forcing developers to purchase from Google In-App Aftermarket services (authorization of In-App Content and payment processing), typically priced at 30 percent of developers' In-App Aftermarket revenue. In a competitive but-for world, elementary economic principles dictate that competitors would enter the market and charge a lower take rate to developers, diverting business from Google and pushing Google's price downward toward marginal cost.[749]

328. Economists have demonstrated empirically that previously monopolistic (or dominant) firms faced with competitive entry lose both market share and pricing power. For example, when AT&T lost its monopoly in long-distance telephone service pursuant to a 1982 divestiture order, it lost substantial market share, and long-distance telephone prices fell substantially, despite any brand loyalty that AT&T may have enjoyed over other long-distance entrants such as MCI.[750] In an article published in the *Journal of Law & Economics*, the authors found that AT&T, which had previously enjoyed a government-sanctioned monopoly, saw its market share decline to approximately 60 percent by the early 1990s.[751] The supply elasticity of AT&T's competitors was estimated at 4.38, consistent with evidence that barriers to entry and expansion in the long-distance market were relatively low during the post-divestiture period.[752] Applying equation V.10 above, the authors calculated that AT&T's firm-specific demand elasticity at between 3.73 and 7.81, which implied price-cost markups of between 13 and 29 percent.[753] These markups are below those found in a range of other industries throughout the economy, indicating that competition had substantially eroded AT&T's market power in the interstate long-distance market.[754] In the absence of competition, AT&T's profit-maximizing prices for long-distance service would have been substantially higher, particularly given that market demand for long-distance service is relatively insensitive to price.[755]

329. Similarly, an econometric analysis of the historically dominant Aluminum Company of America (Alcoa) found that Alcoa's pricing power declined significantly in the

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748. *See, e.g.*, Samat, *Listening to Developer Feedback to Improve Google Play*, *supra* ("Less than 3% of developers with Apps on Play sold digital goods over the last 12 months, and of this 3%, the vast majority (nearly 97%) already use Google Play's billing. But for those who already have an App on Google Play that requires technical work to integrate our billing system, we do not want to unduly disrupt their roadmaps and are giving a year (until September 30, 2021) to complete any needed updates. And of course we will require Google's Apps that do not already use Google Play's billing system to make the necessary updates as well.").

749. *See, e.g.*, MANKIW at 270-282.

750. *See, e.g.,* Simran Kahai, David Kaserman & John Mayo, *Is the "Dominant Firm" Dominant? An Empirical Analysis of AT&T'S Market Power*, 39 JOURNAL OF LAW & ECONOMICS 499-517 (1996) [hereafter Kahai et al.]. *See also* Jeffrey Eisenach and Kevin Caves, *What Happens When Local Phone Service Is Deregulated?* REGULATION 34-41 (2012) at 35 ("There is no disagreement, however, that long distance prices have fallen sharply since liberalization. As shown in Figure 1, in real terms, the price of long-distance service fell by more than 70 percent between 1984 and 2006.").

751. Kahai et al. at 510. This reflects AT&T's output-based market share. Its asset-based market share was even lower, at approximately 40 percent. *Id.*

752. *Id*. at 508.

753. *Id*. at 510 ("The corresponding values of the Lerner index…are 0.29 and 0.13.").

754. *Id.* at 510-513.

755. *Id*. at 509 (reporting market demand elasticities between 0.49 and 0.75).

postwar period, despite substantial barriers to entry and expansion by competitive rivals.[756] The authors estimated the supply elasticity for Alcoa's rivals in the aluminum industry at just 1.4.[757] This was indicative of the substantial capital requirements for primary aluminum producers,[758] and particularly the "extraordinarily high" cost of entry at an efficient scale.[759] Nevertheless, Alcoa's residual demand elasticity was estimated at 8.3, indicating that Alcoa's pricing power, much like AT&T's, had substantially eroded.[760] The authors used the same formula given in equation V.10 above to estimate Alcoa's residual demand elasticity: The market demand elasticity for aluminum was estimated at 2.0.[761] Alcoa's capacity-based market share was approximately 35 percent during the relevant time period.[762] Applying equation V.10, this resulted in a relatively high firm-specific elasticity for Alcoa of 8.3.[763] This relatively high price sensitivity yields a correspondingly low price-cost markup of 12 percent.[764] The authors concluded that, despite the supply constraints faced by Alcoa's rivals, "the aluminum industry has entered a much more competitive market structure in the post-war period."[765] In the absence of competitive entry, Alcoa would have been able to command price-cost markups of approximately 50 percent (equal to $1/E_M = 1/2.0$) rather than 12 percent.

330. I apply this same standard economic framework developed by Landes and Posner (the "Landes-Posner Model") to modeling the but-for take rate in the In-App Aftermarket. These calculations are summarized in Table 8. As seen below, U.S. consumer expenditures in the In-App Aftermarket came to [redacted] between mid-August 2016 (the beginning of the Class Period) and the end of May 2022. Over this timeframe, Google collected [redacted] in U.S. commissions, resulting in a take rate in the actual world of [redacted] percent. Total U.S. transaction volume was [redacted] implying an average consumer price per transaction of [redacted][6] Google received [redacted] per transaction. Google's marginal cost per transaction is conservatively estimated at [redacted] percent of the average consumer price, or [redacted] per transaction, which yields a markup of price over cost of [redacted] percent. By the equation (V.9) above, Google's own-firm elasticity is [redacted] By equation (V.10) above, the market demand elasticity is [redacted] The values of these inputs in the actual world are summarized in the first panel of Table 8 below.

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756. Sheng-Ping Yang, *Identifying a dominant firm's market power among sellers of a homogeneous product: an application to Alcoa*, 34 APPLIED ECONOMICS 1411-1419 (2002).

757. *Id.* at 1416.

758. *Id.* at 1412.

759. *Id.* at 1418.

760. *Id.* at 1417.

761. *Id.* at 1416.

762. *Id.* at 1417.

763. Equal to [redacted]

764. Equal to [redacted]

765. *Id.* at 1418.

766. Average revenue is mathematically equivalent to price per unit. *See, e.g.,* MANKIW at 270 ("Average revenue is total revenue (P x Q) divided by the quantity (Q). *Therefore, for all types of firms, average revenue equals the price of the good*.") (emphasis in original).

767. In the actual world, $E_s = 0$ because competitive rivals are constrained by Google's restrictions. Therefore, $E_M = E_g S_g$. *See, e.g.,* MICHAEL KATZ AND HARVEY ROSEN, MICROECONOMICS 3rd ed. 329-330 (Irwin/McGraw-Hill 1998).

TABLE 8: IN-APP AFTERMARKET IMPACT & DAMAGES (U.S., 8/16/2016 – 5/31/2022)

Actual World

#	Description	Value	Source/Notes
[1]	Consumer Expenditure (US; Before Discounts)	[redacted]	GOOG-PLAY 005535886; Google Transaction Data (US Consumers)
[1a]	Consumer Expenditure (US; Net of Discounts)		*Id.*
[2]	Google Revenue (US; Before Discounts)		*Id.*
[2a]	Google Revenue (US; Net of Discounts)		*Id.*
[3] = [2]/[1]	Google Take Rate		Calculated
[4]	Quantity (Transactions)		GOOG-PLAY 005535886; Google Transaction Data (US Consumers)
[5] = [1a]/[4]	Consumer Price Per Transaction (Net of Discounts)		Calculated
[6] =[2a]/[4]	Google Price Per Transaction (Net of Discounts)		Calculated
[7] = 0.0988*[5]	Google Marginal Cost Per Transaction		Play Financials (equal to [redacted] of consumer expenditure. Includes all direct COS & Direct OpEx)
[8] = ([6] - [7])/[6]	Google Price-Cost Margin		Calculated
[9] = 1/[8]	Google Own-Firm Demand Elasticity		Calculated
[10]	Google Market Share		*See, e.g.*, https://android-developers.googleblog.com/2020/09/listening-to-developer-feedback-to.html
[11] = [10]*[9]	Market Demand Elasticity		Calculated

Absent Google's Restrictions

#	Description	Source/Notes
[12]	Google Market Share	Economic principles/empirical studies
[13]	Competitor Supply Elasticity	Economic principles/empirical studies
[14] = [11]/[12] + [13]*(1 - [12])/[12]	Google Own-Firm Demand Elasticity	Calculated
[15] = 1/[14]	Google Price-Cost Margin	Calculated
[16] = [7]/(1 - [15])	Google Price Per Transaction	Calculated
[17] = [6] - [16]	Total Savings Per Transaction	Calculated
[18]	Pass-Through Rate	Estimated (See Table 13)
[19] = [18]*[17]	Consumer Savings Per Transaction	Calculated
[20] = [5] - [19]	Consumer Price Per Transaction	Calculated
[21] = [16]/[20]	Google Take Rate	Calculated
[22] = [4]*[19]	**Aggregate Damages**	Calculated

Notes: See notes for Table 6, *supra*.

331. The values for the parameters in the competitive but-for world are summarized in the second panel of Table 8 above. Even in the presence of substantial competition, I assume conservatively that Google would have retained a substantial market share of 60 percent. As noted above, this was approximately AT&T's market share in the long-distance market after competitive

entry.[768] It is also substantially above Alcoa's market share after competitive entry by capacity-constrained rival aluminum manufacturers (approximately 35 percent).[769] This estimate is also conservative in relation to market share and concentration statistics for e-commerce markets, in which the payment method is generally not tied to the rest of the transaction: There exists a range of payment methods accepted in U.S. e-commerce markets, from credit and debit cards (Visa, Mastercard, etc.) to digital wallet services (such as Amazon Payments, PayPal, Square, and others).[770] Credit and debit cards account for approximately 58 percent of e-commerce transactions; the second largest payment method is digital wallets, at 25 percent.[771] Visa, the largest credit and debit platform, has a market share of 60 percent.[772] Visa's share of e-commerce payments can therefore be estimated at approximately [58 percent] x [60 percent] = 35 percent. Within the second largest category (digital wallet services), the largest firm is PayPal, with a market share of approximately 55 percent.[773] PayPal's share of e-commerce payments can therefore be estimated at approximately [55 percent] x [25 percent] = 13.75 percent.[774] Thus, my analysis assumes that, in a more competitive world, Google would command a substantially greater market share than Visa or PayPal in e-commerce.

332. In the instant case, the elasticity of supply of Google's would-be rivals in the market for In-App Aftermarket services cannot be measured directly, because Google has foreclosed entry and expansion by rivals. In Table 8 above, I set E_s = 4.38, based on the supply elasticity for AT&T's long-distance competitors estimated econometrically in the literature.[775] Using equation V.10, Google's competitive own-firm demand elasticity for In-App Aftermarket services can now be calculated at [redacted] which implies a but-for price-cost margin of [redacted] percent, as seen in Table 8 above. This competitive price-cost margin is well within the range of AT&T's price-cost margins after entry by long-distance competitors (between 13 and 29 percent),[776] and above Alcoa's post-

768. Kahai et al., *supra*, at 510. This reflects AT&T's output-based market share. Its asset-based market share was even lower, at approximately 40 percent. *Id.*

769. Yang, *supra,* at 1417.

770. J.P. Morgan, *E-commerce Payments Trends: United States* (2019), jpmorgan.com/merchant-services/insights/reports/united-states

771. The remainder was accounted for by bank transfers and other methods. J.P. Morgan, *2020 E-commerce Payments Trends Report: US*, jpmorgan.com/merchant-services/insights/reports/united-states-2020. *See also* D. Tighe, *Distribution of e-commerce payment methods in the United States in 2020*, STATISTA, statista.com/statistics/935676/payment-methods-used-for-online-transactions-usa/ (showing credit cards at 30 percent of e-commerce payments, debit cards at 21 percent, and digital wallets at 30 percent).

772. *See, e.g.,* Lewis Krauskopf, *Swiping their way higher: Visa, Mastercard could be the next $1 trillion companies*, REUTERS (January 31, 2020), reuters.com/article/us-visa-mastercard-stocks/swiping-their-way-higher-visa-mastercard-could-be-the-next-1-trillion-companies-idUSKBN1ZU0JA ("Visa holds a 60% share of the credit and debit card market[.]"). *See also* Julija A., *US Credit Card Market Share: Facts and Statistics,* FORTUNLY (November 23, 2021), fortunly.com/articles/credit-card-market-share/.

773. *See, e.g.*, Douglas Karr, *PayPal Market Share Statistics And Its History of Dominating Online Payment Processing*, MARTECH ZONE (Aug. 3, 2020), martech.zone/paypal-statistics-online-payments/.

774. PayPal's overall online market share has been independently estimated at 14 percent. *See* Stephanie Chevalier, *Which form of payment do you use most often for online shopping?*, Statista, statista.com/statistics/448712/online-shopping-payment-method-preference-usa/. *See also* Douglas Karr, *PayPal Market Share Statistics And Its History of Dominating Online Payment Processing*, MARTECH (Aug. 3, 2020), martech.zone/paypal-statistics-online-payments/ ("18% of all e-commerce is processed by PayPal[.]").

775. Kahai et al. at 508.

776. *Id.* at 510 ("The corresponding values of the Lerner index…are 0.29 and 0.13.").

entry price cost margins of 12 percent.[777] Google's price to developers would fall to [redacted] per transaction in such a competitive but-for world, resulting in total savings of [redacted] per transaction relative to the actual world. In Part VI.D below, I estimate that developers would pass on approximately 91.1 percent of these savings to consumers; accordingly, aggregate damages to consumers in the In-App Aftermarket come to [redacted] over the time period from 8/16/2016 through 5/31/2022 for the U.S.[778] As seen above, Google's take rate would fall to [redacted] percent in this competitive but-for world, which would still afford Google a significant margin on the transactions in the In-App Aftermarket that it retains (Google's price-cost margin would be [redacted] percent, as shown in Row 15 of Table 8 above).

2. Analysis of Similar Platforms Corroborates My Competitive Take Rate In the In-App Aftermarket

333. Following the *Epic v. Apple* ruling that Apple must permit App developers to steer consumers to other payment processing systems, the third-party payment processing firm Paddle announced its pricing structure for Apple's App Store.[779] In addition to providing a suite of merchant services that Apple does not, Paddle offers a ten percent take rate for any transactions under $10, and a five percent take rate plus $0.50 for transactions over this amount. [780] As shown below, if Paddle were to provide the same services to developers on the Play Store at such rates, developers would be unequivocally better off. This includes developers selling low-priced Apps (below $10), as they would pay only a ten percent transaction fee with no fixed component.

TABLE 9: TAKE RATES FOR APPLE APP STORE, THE PLAY STORE, AND PADDLE

	App Store	Play Store	Paddle
Transactions below $10	15-30%	15-30%	10%
Transactions from $10+	15-30%	15-30%	5% + $0.50

Source: *In-App Purchase*, PADDLE, paddle.com/platform/in-app-purchase

334. More generally, it is common practice in digital markets outside of the In-App Aftermarket for entities to contract with outside payment processors. Epic considered an offer for payment processing from Codashop, which has partnered with numerous game developers across Southeast Asia,[781] for fee percentages in the range of three to ten percent.[782] E-commerce Apps that offer material, non-digital goods or services on Android phones outside the Play Store are not subject to Google's restrictions and use services such as Stripe, PayPal, and Square to process payments. These payment processors charge a materially lower commission to developers than

777. Yang, *supra*, at 1417 ("Alcoa's residual demand elasticity is -8.3382. Then, the corresponding value of the Lerner index is 0.1199…").

778. In the event that proof of pass-through is not necessary under the law, I have been asked to calculate damages based on the full reduction in the take rate in the but-for world. I do so in Part VII.A below.

779. Chance Miller, *Paddle unveils 'first alternative' to Apple's App Store In-App Purchase system following Epic ruling*, 9TO5MAC, (Oct. 7, 2021), 9to5mac.com/2021/10/07/app-store-iap-paddle-system-announcement/.

780. *In-App Purchase*, PADDLE, paddle.com/platform/in-app-purchase.

781. The Paypers, *Coda Payments partners Riot Games for payments services across Southeast Asia,* (May 4, 2020), thepaypers.com/ecommerce/coda-payments-partners-riot-games-for-payments-services-across-southeast-asia--1242106.

782. EPIC_GOOGLE_01747963; EPIC_GOOGLE_01747440.

Google. Table 10 provides a list of several prominent examples of take rates charged by other payment processors. Notably, some payment processors offer "micropayment" fee structures specifically tailored to small-dollar transactions, which charge lower fixed fees, as illustrated in row (1b) below.[783] The take rates shown in Table 10 reflect healthy competition among payment processors and are closer in magnitude to the implied costs associated with payment processing, a key component of the services that Google provides in the In-App Aftermarket.[784]

783. *See, e.g.*, Jason Vissers, *How much does PayPal charge?*, Merchant Maverick (Jul. 8, 2022), merchantmaverick.com/the-complete-guide-to-paypals-fees-rates-and-pricing/ ("PayPal offers its Micropayments plan to certain merchants with an average transaction size under $10…These merchants will pay 4.99% + $0.09 for low-value transactions, with the lower fixed fee more than making up for the higher percentage fee."). *See also* Lisa Gennaro, "Stripe vs PayPal – Which One Is Better? (Pros and Cons)," (June 24, 2022) wpforms.com/stripe-vs-paypal-which-one-is-better/ (listing, for micropayments below $10, Stripe fees of "5% + 10¢" and PayPal fees of "5% + .05¢").

784. As explained in the previous section, my analysis incorporates Google's financial information to account for the possibility that Google incurs additional marginal costs, beyond payment processing. Specifically, I conservatively include all direct costs recorded in GOOG-PLAY-000416245 (with the exception of content costs, which are irrelevant).

TABLE 10: PAYMENT PROCESSORS AND THEIR TAKE RATES[785]

	Payment Processor	Example Clients	Take Rate
(1a)	PayPal	American Airlines, eBay, Facebook, Spotify	3.49% + $0.49
(1b)	PayPal Business	Businesses with micropayments	4.99% + $0.09
(2)	Stripe	Lyft, Under Armour, Blue Apron, Pinterest	2.9% + $0.30
(3)	Amazon Pay	Zuora, Shopify, BigCommerce, Magento	
(4)	Braintree*	Uber, StubHub, Dropbox, Yelp	2.59% + $0.49
(5)	Square	Shake Shack, Postmates, Craver	2.6% + $0.10; 2.9% + $0.30†
(6)	Clover	Verizon Business	2.3-2.6% + $0.10
(7)	Authorize.net	TRX Cymbals, Prism Kites	2.9% + $0.30
(8)	Vanco	Churches and public schools	2.9% + $0.45; 2.65% + $0.39††
(9)	Fattmerchant	Lens Crafters, Jimmy Johns, Meineke, Maserati	$99 - $199/month + $0.06 - $0.15 per transaction†††
(10)	Adyen	Booking.com, McDonalds, Spotify, Microsoft	€0.10 + 1-5%††††
(11)	Google Pay**	Burger King, Dunkin Donuts, Target, Doordash	2.9%
(12)	Apple Pay	Best Buy, Taco Bell, Walgreens, Kohl's	3.0%

Notes: Take rates are based on fees for credit card usage. * Owned by PayPal. ** Not to be confused with Google Play Billing. † Square charges 2.6% + $0.10 for in-person swipes and 2.9%

785. *Sources*: (1) Drew Strojny, *Stripe vs PayPal: Who should you choose?*, MEMBERFUL (Jan. 10, 2016), memberful.com/blog/stripe-vs-paypal/; Amanda Swan, *Which online stores accept PayPal?*, FINDER (Dec. 28, 2020), finder.com/paypal-store-list ; (1b) Jason Vissers, *How much does PayPal charge?*, Merchant Maverick (Jul. 8, 2022), merchantmaverick.com/the-complete-guide-to-paypals-fees-rates-and-pricing/ ; (2) Drew Strojny, *Stripe vs PayPal: Who should you choose?*, *supra*; Amanda Swan ; Frank Kehl, *How Does Stripe Work? The Complete Guide to Stripe for Business*, MERCHANT MAVERICK (Jun. 28, 2022), merchantmaverick.com/how-does-stripe-work/ ; (3) Amazon Pay, *Innovative Merchant Payment Services for Small to Medium Businesses,* pay.amazon.com/business/small-business; Amazon Pay Sign up, pay.amazon.com/; (4) Braintree, *Pricing*, braintreepayments.com/braintree-pricing; Braintree, *Boost Revenue with a Global Payments Partner,* braintreepayments.com/ ; (5) Square, Payments, squareup.com/us/en/payments/pricing; Square, Payment Platforms, squareup.com/us/en/payments/payment-platform; Square, *Your all-in-one restaurant POS system,* squareup.com/us/en/point-of-sale/restaurants. (6) Shannon Vissers, *The Complete 2022 Clover Pricing Guide* MERCHANT MAVERICK (Aug. 19, 2021), merchantmaverick.com/clover-pos-cost/ (This rate is for point-of-sale

+ $0.30 for online purchases. †† Vanco offers 2.9% + $0.45 with their "Grow" plan (no monthly fee) and 2.65% + $0.39 for their "Thrive" plan ($49 monthly fee). ††† For the "Starter" plan, it costs $99 plus transactional fees running from $0.08 to $0.15; for the "Enterprise" plan, it costs $199 plus transactional fees running from $0.06 to $0.12. Fattmerchant claims this comes out to less than 1.5% for businesses that process more than $80K annually. *See* source below. †††† Adyen charges a fixed €0.10 processing fee plus a variable payment method fee based on the payment method used. *E.g.,* American Express cards in North America are charged 3.3% + $0.10; Mastercard cards are charged an Interchange fee. Interchange fees are 2% on average within the US. *See* www.adyen.com/blog/interchange-fees-explained.

D. Standard Economic Principles Show That Developers Would Pass Through to Consumers at Least a Portion of Any Savings from a Lower Take Rate

335. Google's take rate from developers typically ranges from 15 to 30 percent of revenue, with the average at approximately 30 percent.[786] In the competitive but-for world, these costs would have been lower. As explained in this section, standard economic models applied to data produced in discovery demonstrate all or almost all U.S. Consumers would have benefitted as a result. I take no position on whether proof of pass-through is necessary under the law.[787]

1. Standard Economics Shows That Prices Depend on Costs

336. One of the most universal principles of economics is that prices depend on costs.[788] Prices rise as marginal costs rise and fall as marginal costs fall. In perfectly competitive markets, firms pass through to buyers 100 percent of marginal cost increases or decreases in the form of correspondingly higher or lower prices.[789] In the absence of perfect competition, or indeed any

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transaction; Clover charges 3.5% + $0.10 for online (keyed in) transactions); Verizon Communications, *Verizon Business offers touchless payment capability with Clover from Fiserv*, GLOBENEWSWIRE (Dec. 10, 2020), globenewswire.com/news-release/2020/12/10/2143226/0/en/Verizon-Business-offers-touchless-payment-capability-with-Clover-from-Fiserv.html/ (7) authorize.net, *Pricing,* authorize.net/sign-up/pricing.html; Featured Customers – Autorize.net, featuredcustomers.com/vendor/authorizenet/customers. (8) Vanco, *Pricing,* www.vancopayments.com/egiving/pricing; Neal St. Anthony, *Vanco Payment Solutions grows as electronic bridge between churches, charities and their donors*, STAR TRIBUNE (Aug. 31, 2020), startribune.com/vanco-payment-solutions-grows-as-electronic-bridge-between-churches-charities-and-their-donors/572250712/. (9) POSQuote.com, *Fattmerchant vs. Square: Which Payment Processor Is Best?,* posquote.com/review/fattmerchant-vs-square; Stax Payments – Healthcare, staxpayments.com/healthcare/. (10) Adyen, *Pricing,* www.adyen.com/pricing; www.adyen.com/customers. (11) Bankrate, *Guide to Google Pay* (Jan. 14, 2021), www.bankrate.com/finance/credit-cards/android-pay-google-pay-guide/#:~:text=While%20there%20is%20no%20charge,you%20use%20a%20credit%20card.; Google Pay, *For Business,* pay.google.com/about/business/partners/. (12) Mark Jansen, Christian de Looper, and Paula Beaton, *PayPal vs. Google Pay vs. Venmo vs. Cash App vs. Apple Pay Cash*, DIGITAL TRENDS (July 5, 2021), digitaltrends.com/mobile/paypal-vs-google-wallet-vs-venmo-vs-square-cash/; MacRumors, *Apple Pay,* www.macrumors.com/roundup/apple-pay/#:~:text=Some%20of%20Apple's%20partners%20include,Bell%2C%20and%207%2D11.

786. *See* Table 8, *supra*, Row 3; *see also* Table 6, *supra*, Row 6.

787. In the event that proof of pass-through is not necessary under the law, I have been asked to calculate damages based on the full reduction in the take rate in the but-for world. I do so in Part VII.A below.

788. *See, e.g.,* MANKIW, Chapter 4; Chapter 13.

789. *Id.* at 272, Figure 1 (showing price = marginal revenue = marginal cost for a competitive firm).

TABLE 17:
AT MOST A *DE MINIMIS* SHARE OF APPS WOULD NOT LOWER PRICE DUE TO FOCAL-POINT PRICING

	(1)	(2)
	% of all Units Sold	% of all Consumer Expenditures
App Distribution Market	[redacted]	[redacted]
In-App Aftermarket		
Combined Markets		

Source: Google Transaction Data. *Notes*: Focal-Point Pricing defined as price ending in "9", consistent with the economic literature. This analysis was performed using before-tax prices. Each app-month's but-for price was rounded to the nearest price with a hundredth decimal place ending in "9." This but-for focal-point price was then compared to the actual price charged. Column (1) displays the percentage of all units sold which would not have had a decreased App price in the but-for world. Column (2) displays this amount in terms of the sales revenues generated.

VII. AGGREGATE DAMAGES TO THE U.S. CONSUMERS

A. App/In-App Models

414. U.S. Consumers' aggregate damages are computed using the overcharges calculated in Tables 6 and 8. These damages are summarized in Table 18. In Appendix 5, I break down these damages by U.S. state and territory.

TABLE 18: AGGREGATE DAMAGES, APP/IN-APP MODELS (U.S., 8/16/2016 – 5/31/2022)

		Android App Distribution Market (Table 6)	**In-App Aftermarket (Table 8)**	**Aggregate**
[1]	**Average Actual Consumer Price**	[redacted]	[redacted]	[redacted]
[2]	**Average But-For Consumer Price**			
[3] = [1]-[2]	**Average Overcharge**			
[4]	**Quantity Purchased**			
[5]	**Aggregate Damages**			

Notes: Aggregate prices and overcharges are weighted averages across both markets.

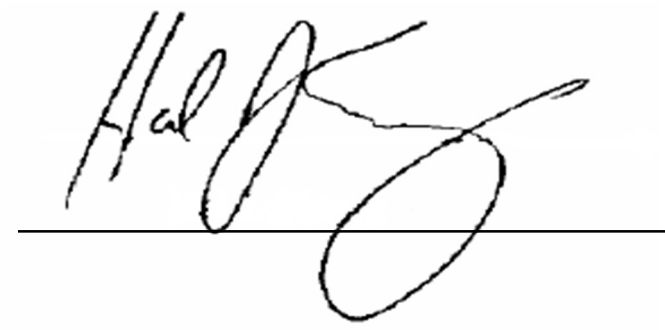
415. In the event that proof of pass-through is not legally necessary, I have been asked to calculate aggregate damages based on the full reduction in the take rate in the but-for world. Under this assumption, aggregate damages for the Android App Distribution Market come to [redacted], and aggregate damages in the In-App Aftermarket come to [redacted]

CONCLUSION

430. For the foregoing reasons, I conclude that the Challenged was anticompetitive and resulted in injury to competition and consumers, including U.S. Consumers overpaying for initial downloads from the Play Store and for In-App Content. In addition, the proposed Injunctive Class would benefit from removal of the Challenged Conduct.

* * *

Hal J. Singer, Ph.D.:



Executed on October 3, 2022.

Exhibit D13
Public Redacted Version

EXHIBIT 41

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

IN RE: GOOGLE PLAY STORE ANTITRUST LITIGATION
Case No. 3:21-md-02981-JD

THIS DOCUMENT RELATES TO:
Epic Games Inc. v. Google LLC, et al.
Case No. 3:20-cv-05671-JD

In Re: Google Play Consumer Antitrust Litigation
Case No. 3:20-cv-05761-JD

State of Utah, et al. v. Google LLC, et al.
Case No. 3:21-cv-05227-JD

Match Group LLC, et al., v. Google LLC, et al.
Case No. 3:22-cv-02746-JD

** CONFIDENTIAL **

DEPOSITION OF MARC S. RYSMAN, PhD, called as a witness by and on behalf of Google LLC, pursuant to the applicable provisions of the Federal Rules of Civil Procedure, before P. Jodi Ohnemus, RPR, RMR, CRR, CA-CSR #13192, NH-LSR #91, MA-CSR #123193, and Notary Public, within and for the Commonwealth of Massachusetts, at 100 Cambridge Street, Boston, Massachusetts, on Friday, March 10, 2023, commencing at 9:07 a.m.

VIDEO OPERATOR: Okay. And would the court reporter please swear in the witness.

MARC RYSMAN, PhD, having satisfactorily been identified by the production of a driver's license, and being first duly sworn by the Notary Public, was examined and testified as follows to interrogatories

BY MR. RAPHAEL:

Q. Good morning.

A. Good morning.

Q. Would you please state your name for the record.

A. Marc Rysman.

Q. Good morning, Doctor Rysman. You've been deposed a number of times?

A. Yes.

Q. How many times?

A. Five or six times.

Q. Okay. Any of those in antitrust cases?

A. I don't think I've been deposed in an antitrust case.

Q. Have you ever offered testimony in court or arbitration in an antitrust case?

A. I don't think that the -- the court

of my head, no.

Q. Okay. So if the State of Florida were paying some of your fees in this matter, do you agree with everything that the State of Florida does?

MS. WEINSTEIN: Objection to form.

A. No.

Q. Okay. So it's possible to do work paid for by someone you disagree with; right?

MS. WEINSTEIN: Objection to form.

A. I agree with the premise, yes.

Q. Now, I had the court reporter previously mark two exhibits. They are DX 1057 and 1058. And 1057 is your opening report in this matter, and 1058 is your reply report in this matter.

I see you have clean copies, you've testified, of those reports in front of you. I'm happy to let you consult those and just keep these as the exhibits as long as other counsel are fine with that as well.

MS. WEINSTEIN: That's fine. One difference may be that the errata that was served to Doctor Rysman's report is at the back of this document. But --

MR. RAPHAEL: I'm fine with that.

MS. WEINSTEIN: Okay.

MR. RAPHAEL: If I need to introduce the errata, I'll do that, and we'll just work together on that.

MS. WEINSTEIN: Do you have a copy of those exhibits for me?

MR. RAPHAEL: Of these I do, yeah.

MS. WEINSTEIN: May I have it?

MR. RAPHAEL: Yeah.

MS. WEINSTEIN: Thank you.

VIDEO OPERATOR: Your microphone fell off.

MS. WEINSTEIN: Thank you.

Just so we're clear, the opening is 1057 and the rebuttal is 1058?

MR. RAPHAEL: Yes. That's right.

MS. WEINSTEIN: Thank you.

Q. All right. Now, if you could turn to your opening report -- again, for the record, that's 1057 -- you signed that report on October the 3rd of 2022?

A. Yes.

Q. Okay. And who wrote your opening report?

MS. WEINSTEIN: Objection to form.

A. So I have authorship of the report. In terms of who actually put the words and the text

first, it was between me and my team at Alex Partners, but all of the words I reviewed and adopted as my own or edited.

Q. Okay. What percentage of the report would you say you personally wrote as opposed to the team that you mentioned?

MS. WEINSTEIN: Objection to form.

A. Well, as I said, I personally take authorship of the entire report. If you're asking -- sorry. I'm the author of the entire report.

Q. I understand that. I asked what portion of your report did you personally write?

MS. WEINSTEIN: Objection to form.

A. If you're asking about who first sort of typed up the words and -- and that -- then in some cases I adopted as my own, I really don't know what share was written by Alex Partners versus myself.

Q. Can you give any estimate?

MS. WEINSTEIN: Objection to form.

A. I really can't.

Q. Okay. And if you could turn to your rebuttal report, which is DX 1058. You signed that report on December 23rd, 2022?

A. Yes.

Q. And who wrote your rebuttal report --

MS. WEINSTEIN: Objection.

Q. -- or your reply report?

MS. WEINSTEIN: I'm sorry, Justin. Objection to form.

A. So, again, I take authorship of the report; every word I reviewed and adopted as my own. Exactly who typed the words first into the word processor, I don't know.

Q. And can you give any estimate of the portion of the report that you personally typed into the word processor in the first instance?

MS. WEINSTEIN: Objection. Objection to form.

A. I cannot. I can say that and for both reports I wrote the outline first and gave that to the -- Alex Partners to pick up various pieces of.

Q. Okay. Now, in writing your reports or in adopting the words of your reports, you used your words carefully; right?

MS. WEINSTEIN: Objection to form.

A. Yes.

Q. And you've been an expert several times before. So you know that you might have to testify under oath to the opinions in your report; right?

A. No.

Q. So you don't know whether the Samsung Galaxy store has the sufficient number of apps for it to be attractive to consumers?

A. In general, consumers want more apps. So I'm not sure how I would find, sort of, a minimum at which it can be successful.

Q. Is the fact that Samsung Galaxy store usage is [redacted] but the ability of the app store is [redacted] is that consistent with Google Play just being a better app store than the Samsung Galaxy store?

MS. WEINSTEIN: Objection to form.

A. Consistent with it, but I think in this case it's not the only explanation.

Q. What have you done to exclude that explanation?

A. I don't think it's necessary to exclude that explanation. I can show that it's -- the behavior is that Google has these contracts that are exclusionary or prevent rivals from succeeding. And Google has market power, and thus that's why I conclude they acted anticompetitively.

Q. So is your --

MS. WEINSTEIN: Excuse me. Did you finish

loading?

MS. WEINSTEIN: Objection to form.

A. I'd have to check my report, but I understand that the AFAs have some restrictions on the ability -- they impose some restrictions on the ability of phones to do side loading.

Q. Does operating system compatibility reduce cost for developers?

MS. WEINSTEIN: Objection to form.

A. It could. There do seem to be some ways around that that -- that does -- there were -- I reference some activity that would have addressed operating system compatibility as a problem for developers.

Q. Okay. But in -- does reducing costs for developers, in your view, increase app output?

MS. WEINSTEIN: Objection to form.

A. Reducing the cost of developing apps would lead to more apps and that could lead to more app output.

Q. And so if operating system compatibility reduced the cost of developing apps, that should increase -- lead to an increase in the number of apps as well; right?

MS. WEINSTEIN: Objection to form.

Commonwealth of Massachusetts
Middlesex, ss.

I, P. Jodi Ohnemus, Notary Public in and for the Commonwealth of Massachusetts, do hereby certify that there came before me on the 10th day of March, 2023, the deponent herein, who was duly sworn by me; that the ensuing examination upon oath of the said deponent was reported stenographically by me and transcribed into typewriting under my direction and control; and that the within transcript is a true record of the questions asked and answers given at said deposition.

I FURTHER CERTIFY that I am neither attorney nor counsel for, nor related to or employed by any of the parties to the action in which this deposition is taken; and, further, that I am not a relative or employee of any attorney or financially interested in the outcome of the action.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my seal of office this 12th day of March, 2023, at Waltham.

P. Jodi Ohnemus, RPR, RMR, CRR,
CSR, Notary Public,
Commonwealth of Massachusetts
My Commission Expires:
3/3/2028

Exhibit D14
Public Redacted Version

EXHIBIT 44

Message

From: Sameer Samat [ssamat@google.com]
Sent: 1/17/2017 5:05:38 PM
To: Kirsten Rasanen [krasanen@google.com]
CC: Brandon Barras [bbarras@google.com]; Larissa Fontaine [larissa@google.com]; Tia Arzu [tiaa@google.com]; Paul Feng 馮友樸 [pfeng@google.com]; Jamie Rosenberg [jamiero@google.com]; Purnima Kochikar [kochikar@google.com]; Mary Oh [maryoh@google.com]; Larry Yang [lryang@google.com]
Subject: Re: Tinder and Google Play Billing [Concern]

Your point about dating being a category where it is unlikely you'll have year + long subscriptions is compelling to me.

Matching funds makes sense to me -- what can people use these for? Is it like giving them credit for Adwords?

I still find the 15% number kind of random. I understand what Paul is saying that Apple set a benchmark, but it seems like a gigantic decision and justifying such a huge business model impacting number (for the developer too!) with "apple did it" feels bad to me.

It seems like there is urgency to do something here. What are you guys proposing now based on this thread ?

sameer

On Thu, Jan 12, 2017 at 10:06 AM, Kirsten Rasanen <krasanen@google.com> wrote:
Thanks, Sameer. It is a complicated issue and agree that there are many ways we can achieve the same end. Just want to offer a couple of nuances regarding the dating category that may be helpful context.

1. It's true that Apple's model is 30% for year one and 15% thereafter, but that's not super enticing for dating apps. Since the traditional goal of these services has been to help users find a mate, subscription terms for longer than one year are not very common. From the user perspective, if Match.com doesn't work for me in 12 months, I'm probably going to try another service. If it does work for me, I'm going to unsubscribe. (Duly noted that Tinder is changing that a bit as the goal isn't necessarily the same for a Tinder user…)
2. The larger (most profitable) services like Match, [redacted] began as web businesses (10 - 20 years ago) and are actually quite sophisticated in terms of churn-reduction, reengagement and buyer conversion. In some ways our billing platform is not as good as theirs currently are. These three are primarily US-based. Services like Tinder and Plenty of Fish do have global ambitions which makes GPB more attractive, though for legacy businesses (like POF), they tell us 30% rev share is still prohibitive for exclusive adoption.

Finally, on the idea of co-marketing, we are thinking about ways that we can potentially offer marketing funds to Tinder as part of a broader co-marketing initiative. This would be a way to mitigate the risk of Tinder diversifying payment methods, but it's unlikely that co-marketing funds will bring services like Match [redacted] on to GPB unless we are willing to make a huge investment ($10M+ to offset 30% rev share) which doesn't seem likely.

All said, this certainly merits additional consideration. BD and product (Paul, Larry, Larissa and others) are engaged in on-going discussions about billing policy, platform and incentives.

Thanks,
Kirsten

On Thu, Jan 12, 2017 at 8:51 AM, Sameer Samat <ssamat@google.com> wrote:
An alternative to dropping the rev share here could be a one time commitment to go-marketing funds for 2017 to help drive growth in exchange for them getting onto play billing. This would cost us quite a bit in 2017 but

could make us more money in the medium term. Once we go to 15% right off the bat there is no coming back and it puts pressure for us to do the same on other verticals.

ios's billing isn't 15% in the first year -- it's 30% then 15%, yes? Do we need to go right to 15% here? I think a longer term view here might be helpful -- I think the product team and bd should sit down and think this through a bit. For example, if we put in place a promotions and loyalty system that developers can implement in their app to help subscription based services retain and reengagement consumers across ad networks and via play store / play marketing channels we could do something clever in the future and say:

It's 30% for subs in year 1. But 50% of that we hold in an account for you to use our promotion systems to retain subs -- our goal is to help you build a long term business with loyal users. Any sub that makes it to the 1 year renewal point billing drops to 15%.

If we go to 15% right now in year 1 there is no way to go back and implement these kinds of things so it is really important to think through where we want to go.

Also, you mentioned in your summary Brandon "undetermined platform value". Are these dating companies all in the US? Do they have plans to go international? Does our billing perform worse for all of them? I have some trouble believing that because a lot these companies are smaller and unlikely to have developed sophisticated declines / involuntary churn efforts. Although I could be surprised by how bad we are at this perhaps.

Also, PaulF: I think all this 30%, 15% stuff is pretty arbitrary. The cost should be a function of the LTV and cost of acquisition in the category. Not to make things too complicated, but in the retail world Amazon marketplace charges a variable rate per category based on the underlying margin and cost structure of those goods. It shows respect for the partners business to understand things at this level -- and provides flexibility to be able to adjust as needed. In the case of Play the reality is each partner would likely just have one rate they'd need to deal with (vs. retailers who sell across categories quite often). Any thoughts on this ?

On Thu, Jan 12, 2017 at 7:16 AM, Brandon Barras <bbarras@google.com> wrote:
Per Larissa's note, we have thought about how we might extend LRAP-like rev share terms to dating partners. While there are not as many logical product integrations (i.e. dating apps on ATV or in Auto don't make a lot of sense), there is still opportunity for partners to increase investment in the platform in exchange for increased rev share from Play.

Goal

- Ensure that top dating apps become and remain exemplar users of Google Play Billing and strengthen GPB position as a leading payments platform

Overview

- Top dating partners have resisted using GPB due to:
  - Existing payments infrastructure
  - Lack of desire to pay 30% rev share for undetermined platform value
- 6 of the top grossing dating apps on iOS are not using Google Play Billing (est annual rev on iOS $136M)

- Lack of policy clarity has allowed these partners to remain on their own payments infrastructure on Android

Terms:

- In exchange for a discounted 15% revshare, developers opted into DDAP must comply with:
  - GPB integration
  - Product Parity for iOS and Android
  - Adoption of Play best practices including Material Design, SmartLock...etc
  - Upgrade to the latest Android OS w/n 90 days of launch

- Potential Deal length
  - Minimum term commitment of 24 months and 12 month auto renewals unless either party terminates 30 days before renewal date; upon termination developer has a [3 month] transition period before revenue share will revert

Let us know your thoughts/comments.

Thanks,

-BB

On Wed, Jan 11, 2017 at 12:35 PM, Larissa Fontaine <larissa@google.com> wrote:
PRIVILEGED

Correction: not quite as much tindering as originally thought. 2016 consumer spend was [redacted].

On Wed, Jan 11, 2017 at 9:19 AM, Tia Arzu <tiaa@google.com> wrote:
Haha!!

Thanks,
Tia

||| **Tia Arzu**
||| Senior Counsel, Google Inc
Registered In-House Counsel (CA), Licensed only in Georgia
650-214-1908

On Wed, Jan 11, 2017 at 9:13 AM, Sameer Samat <ssamat@google.com> wrote:
that's a lot of tindering ...

On Wed, Jan 11, 2017 at 8:57 AM, Larissa Fontaine <larissa@google.com> wrote:
PRIVILEGED

Worth noting that Tinder delivered [redacted] in consumer spend last year, 2nd among all apps ([redacted] is 1st) and the top subscription service.

On Wed, Jan 11, 2017 at 8:51 AM, Brandon Barras <bbarras@google.com> wrote:
Hi Sameer,

That's right - the decline is in **our** revenue from GPB. OKC noted that while overall conversion is lower with their credit card option, the conversion decrease is offset by the removed rev share. We've asked them to share specific data, but they've been hesitant to do so.

As you mentioned, the concern is Tinder would make similar changes without telling us, leading to a decline in Play's overall revenue.

-BB

On Wed, Jan 11, 2017 at 11:35 AM, Sameer Samat <ssamat@google.com> wrote:
Ok I see -- sorry for being slow -- to confirm, when we say revenue decline we mean they've added options next to ours and *our* revenue has declined -- it's not play billing that has caused *their* revenue to decline, yes?

and I understand now why you are worried -- they wouldn't necessarily need to mention much to us I guess -- they would just some day show up with these other options.

do we know why they added these? I assume it's to escape the 30% ? or do they find higher conversion with their own flow here?

On Wed, Jan 11, 2017 at 7:53 AM, Brandon Barras <bbarras@google.com> wrote:
Hi Sameer,

In addition to GPB, OKCupid added separate PayPal and credit card payment options in their payment flow leading to the revenue decline previously mentioned. They have since removed PayPal and now offer both GPB and credit card options - see attached.

You're correct that there has been no direct mention by Tinder of a billing change beyond the purchase data migration, most likely to the Match Group's backend. Given Match Group's reluctance to adopt GPB across their apps due to existing payment infrastructure and lack of desire to pay the 30% rev share, along with OKCupid's payment diversification, we wanted to be sure this group was aware of any possible change given Tinder's overall revenue impact for Play.

-BB

On Wed, Jan 11, 2017 at 2:24 AM, Sameer Samat <ssamat@google.com> wrote:
The initial email here indicates there's been no mention on their end that they are concerned yet in this migration -- has something changed there?

btw, what does it mean exactly to add "additional payment options" ?

On Tue, Jan 10, 2017 at 8:26 PM, Larissa Fontaine <larissa@google.com> wrote:
PRIVILEGED

Meeting earlier would be ideal but I believe scheduling was proving difficult with this attendee list. To Jamie's point, we could explore an LRAP-style program for dating developers and share that over email in the next day or so (proposal has already been drafted). Even if we proceed with the policy change we'll need to account for a DDA change, notice periods, etc. and will likely need an interim solution for the next 6-12 months, anyway.

Thanks,
Larissa

On Tue, Jan 10, 2017 at 5:34 PM, Paul Feng 冯友樸 <pfeng@google.com> wrote:
Jamie,

The team is working on coming back with more details to address some of the feedback you, Sameer and Purnima gave. We have a review scheduled for 1/25, which is a couple of weeks away.

Given that what we do with Match Group will be influenced by our broader decision, I'd suggest that we discuss at the same time. If it's super urgent, I can see if we can pull in that 1/25 review. Larissa, what are your thoughts about doing that?

On Tue, Jan 10, 2017 at 1:02 PM, Jamie Rosenberg <jamiero@google.com> wrote:
PRIVILEGED

What is the status of the policy exercise?

My initial reaction is that even if the notion of a broad policy change for all subscription apps is a long way off, if we were to make a change for Tinder it should be in the context of *some* policy adjustment -- i.e., the expansion of the scope LRAP, as an example. Doing it as a one-off without a way to explain to other similarly situated developers feels problematic.

On Tue, Jan 10, 2017 at 11:49 AM, Larissa Fontaine <larissa@google.com> wrote:
+ Larry

PRIVILEGED

Repinging this thread post-holidays...Jamie and Sameer, I know we have a review on subscriptions policy+rev share coming up, do you want to include this topic or should we set up a separate time to discuss an interim solution for Tinder/Match?

Thanks,
Larissa

On Fri, Dec 16, 2016 at 4:55 PM, Brandon Barras <bbarras@google.com> wrote:
PRIVILEGED AND CONFIDENTIAL

Tl;dr: There is growing concern that Tinder may add additional billing options, or move away from Play Billing all together, in early 2017. We would like to discuss mitigating that risk by offering 15% rev share to Match Group. This recommendation is made in the context of a possible policy shift that would provide Match with this rev share adjustment without custom deal terms (recognize this is still under discussion and TBD).

Background

- Tinder is the only major dating app owned by the Match Group still exclusively using GPB and currently Play's second highest grossing app [redacted]
- OKCupid, one of the first Match Group apps to use GBP, added additional payment forms in 2016 leading to an average [redacted].
- Match Group's remaining major brands (Match.com, PlentyOfFish and Meetic) have resisted adoption of GPB due to a robust existing payment infrastructure and then the lack of desire to pay the 30% rev share
  - Those 3 apps generated ~$69M on iOS YTD

Concern

- Tinder recently told us they are undergoing a massive purchase data migration, most likely to the Match Group's backend. This raises concern that Tinder may enable additional payment options or move off GPB entirely post migration, though there has not been any additional signaling of a change.

Recommendation

- Consider extending a reduced rev share across the Match Group with a requirement of GPB as the sole payment method in advance of a possible policy change.

Jamie and Sameer, would it be useful to discuss this in person? Happy to work with Elyse and Erin to schedule something for next week or the first week in January.

Thanks,

Brandon

Brandon Barras | Google Play Partnerships | bbarras@google.com | 212-565-7477

Larissa Fontaine | Google Play | larissa@google.com

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Larissa Fontaine | Google Play | larissa@google.com

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Brandon Barras | Google Play Partnerships | bbarras@google.com | 212-565-7477

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Brandon Barras | Google Play Partnerships | bbarras@google.com | 212-565-7477

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Larissa Fontaine | Google Play | larissa@google.com

--

Larissa Fontaine | Google Play | larissa@google.com

This email may be confidential or privileged. If you received this communication by mistake, please don't forward it to anyone else, please erase all copies and attachments, and please let me know that it went to the wrong person. Thanks.

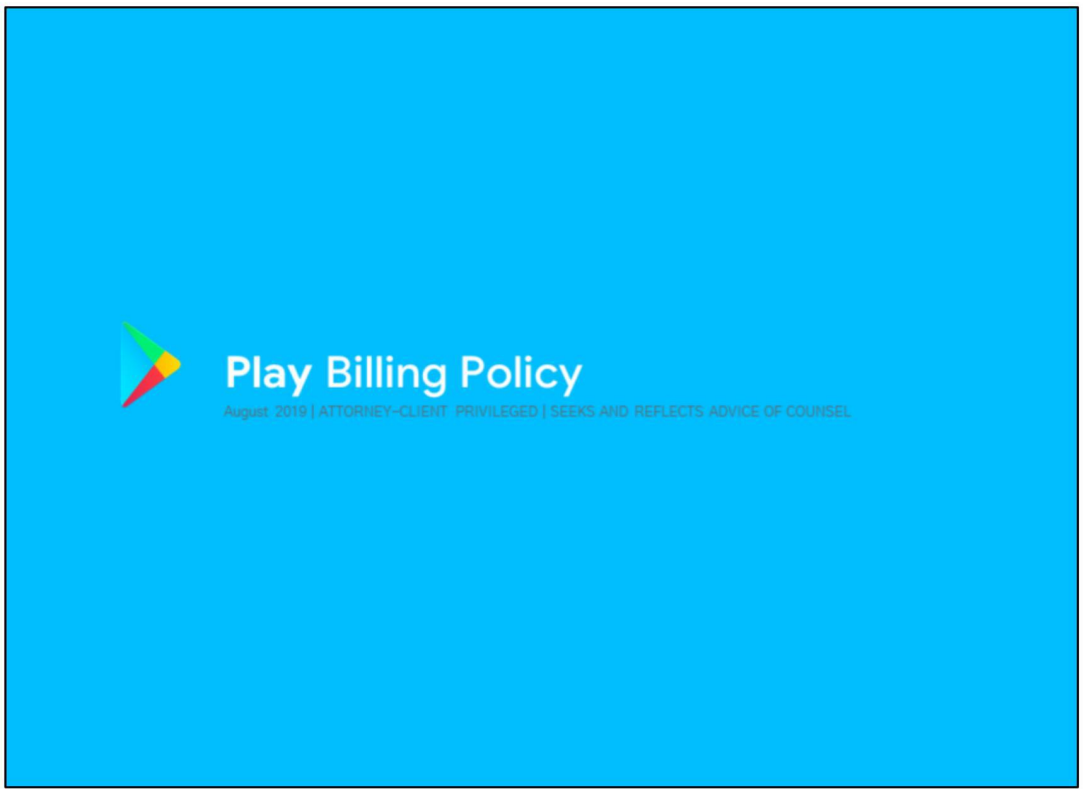
--

Brandon Barras | Google Play Partnerships | bbarras@google.com | 212-565-7477

krasanen@google.com 646-345-8662

Exhibit D15
Public Redacted Version

EXHIBIT 45


Play Billing Policy
August 2019 | ATTORNEY-CLIENT PRIVILEGED | SEEKS AND REFLECTS ADVICE OF COUNSEL

- Play is going to be a [redacted] business in 2019 [redacted] consumer spend). XX% y/y growth. XX% comes from games IAP.

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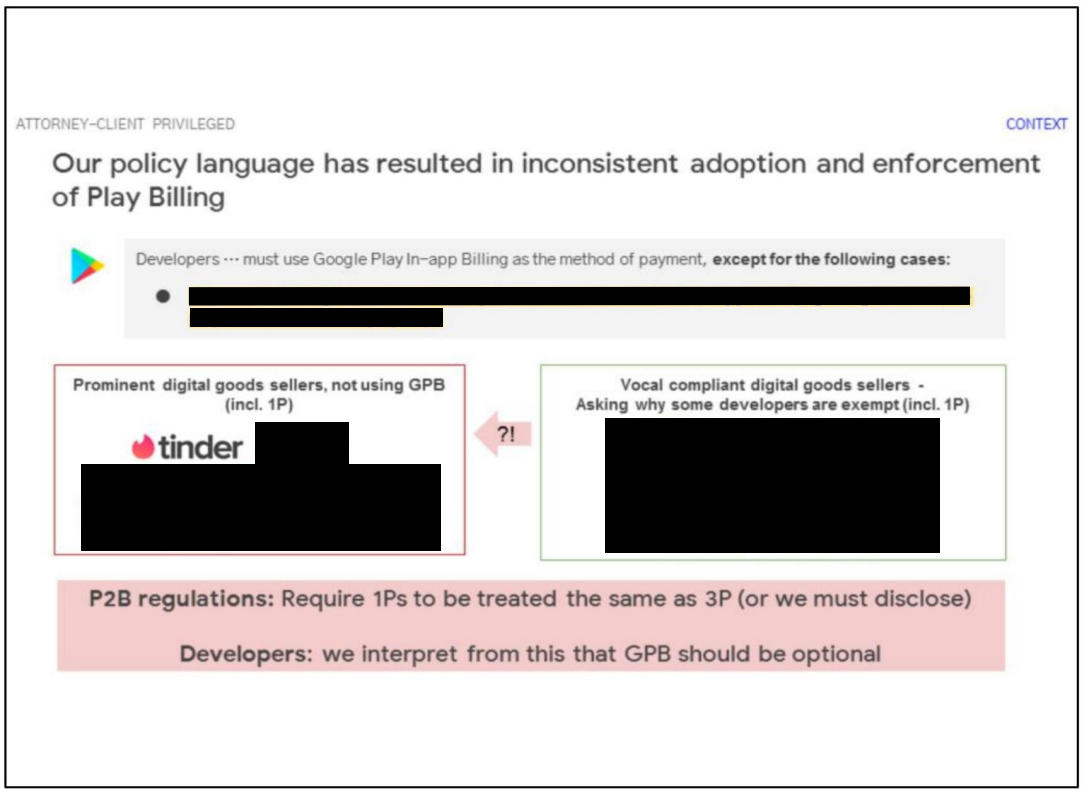

Play's lack of clarity and exceptions makes it hard to defend that Billing is an integral part of the product risking regulation that makes billing optional for all devs

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CONTEXT

Press attention (incl. Tinder) is accelerating de-integrations and risk

Apps are actively de-integrating / adding native default payment options

[redacted]

More are at risk: Tinder press causing new inquiries from developers

[redacted]

Game developers have also taken notice (Playtika inquiring)

Status as of August 2019:

- Reactive talking points for BDMs are vague – "mind your business"
- We expect a large increase in violations
  - Many tough calls to come about when to enforce / no-enforce
  - Current enforcement (non-managed games apps are enforced for TPP) is very inconsistent.

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CONTEXT

Developers are voicing concerns, beyond the policy gap

Concern	Who is saying this?
"Our margins are too thin to support even 15% revenue share"	Apps with high content licensing costs (e.g. streaming video apps, Korean media apps)
"My billing platform is a competitive advantage and would perform better for me"	Mature developers who've invested in commerce (e.g. [redacted]
"We want to give users choice of payment"	[redacted]
"We have better FOP coverage; GPB won't work for our users unless you catch up"	Partners whose investments in payments for emerging & frontier markets has outpaced ours [redacted]
"We think Google Play's value to us declines as our brand and repeat buyers grow"	Mature game devs [redacted]
Redacted - Privilege	[redacted]

ATTORNEY–CLIENT PRIVILEGED CONTEXT

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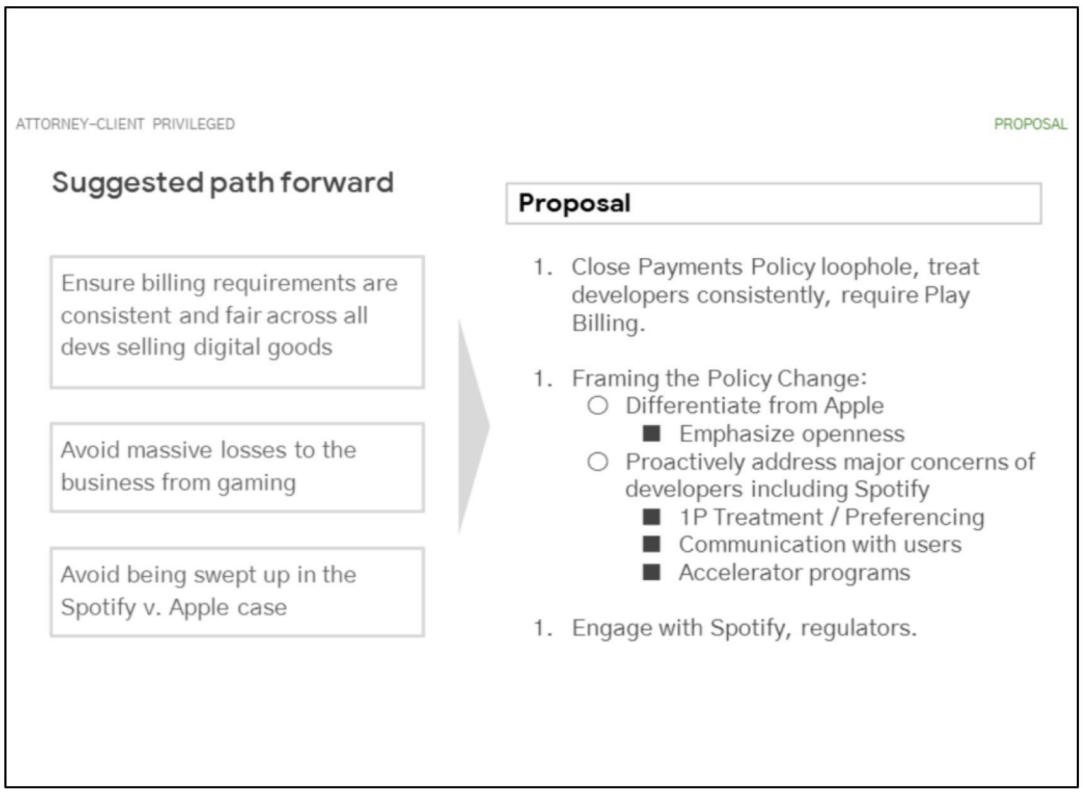

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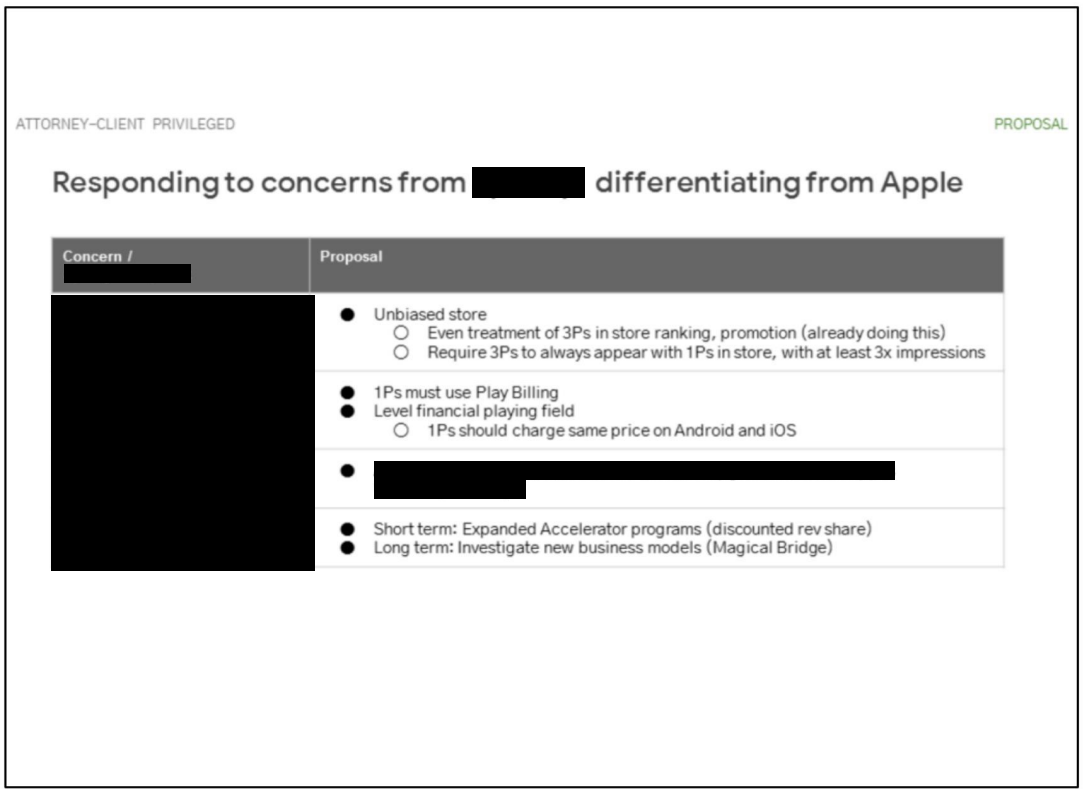

Table:

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PROPOSAL

Addressing broader developer concerns

Concern	Potential responses under current proposal
Our margins are too thin to support even 15% revenue share	● Go consumption only ● Accelerator programs ● Developer can charge user more on mobile than web
My billing platform is a competitive advantage and would perform better for me	● Go consumption only (we can be flexible on communicating with users) ● Accelerator programs
We want to give users choice of payment	● User choice is already built into GPB
We need better FOP coverage if GPB is going to work for our users	● Developer input in FoP roadmap ● Prioritizing optimizing under-performing FoPs (e.g. India)
We think Google Play's value to us declines as our brand and repeat buyers grow	● Short-term: Project Hug, Long-term: Magical Bridge
It is anti-competitive to force us to use your billing	● We invest heavily in Play and Android and GPB is how we monetize those platforms. ● We only charge when developers charge.

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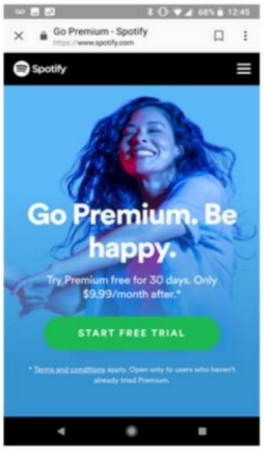
PROPOSAL

Spotify Approach: leaning into the partnership, highlighting our need to enforce

- Share our revised policy proposal and that we plan to enforce. We delivered a similar message to Daniel in late 2017.
- Acknowledge that we are aware of their concerns and that we've taken measures to address them. We are expectant and comfortable with them going consumption only.
- As we do today, we want to work together to ensure Spotify and Google drive maximum value for our mutual users, including our Android, Google Play, GCP, Ads, and Assistant partnership (more here).



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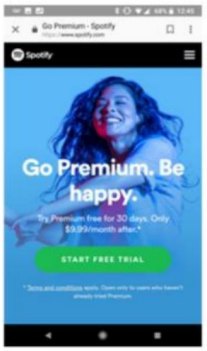
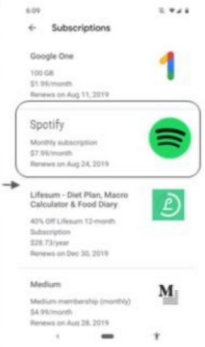
PROPOSAL

Alternative Spotify Approaches to consider again...

Options	Concerns
Policy exemption for Spotify ● Could include other large strategic partners, e.g. Netflix ● Could charge a rev share	[redacted]
Hybrid - Spotify Billing integrated with Play ● Maintains "Play Billing good for users" argument. ● Manage subs from Play ● Allows Spotify to still use their billing	[redacted]



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PROPOSAL
Tinder Approach: offer rev share discount in exchange for add'l Android investment
tinder
[redacted]
3 proposed approaches:
[redacted]
Bloomberg
Technology
Tinder Bypasses Google Play Joining Revolt Against App Store Fee
Tinder Value Breakdown
(Period: 2018Q1-2019Q1)
[redacted]
[redacted]
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ATTORNEY-CLIENT PRIVILEGED

PROPOSAL

Tinder Approach: Android investment to include, but not limited to

[redacted]

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ATTORNEY–CLIENT PRIVILEGED

PROPOSAL

Self Preferencing: critical to work with 1Ps to address this claim

We own the **platform** and 1P services – competitors and regulators argue that we have inherent advantages that we could leverage (that is a benefit of vertical integration)

Store and Ranking

WSJ *Apple Inc.'s mobile apps routinely appear first in search results ahead of competitors in its App Store, a powerful advantage that skirts some of the company's rules on such rankings, according to a Wall Street Journal analysis."*

Rev Share, Pricing

[redacted]

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Self Preferencing: Addressing store / ranking concerns

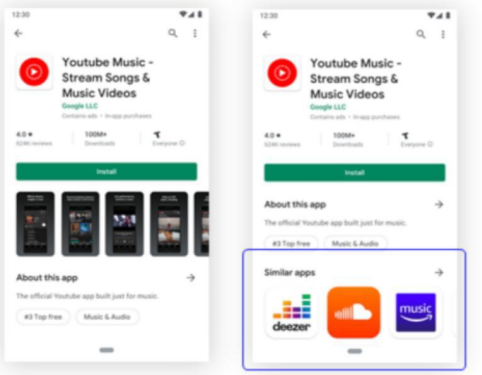
Search Results

- Ensure 3Ps show above 1Ps via demoting 1P in ranking
- Show "Similar Apps" above the fold on Mini Details Page

App Details

- Add "Similar Apps" cluster above the fold on 1P app details pages.
- Feature "Similar Apps" cluster above fold on post-install
- Disable 1P apps for 3P cross sell.

App details page example



Before... After

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Id	Date	Text
1	08/02/2019 03:25:29	+pbankhead@google.com , +iramm@google.com - did a quick update of the slide - does this represent roughly what we talked about? (some details purposefully excluded)

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Work in progress

Self Preferencing: Addressing financial / rev-share concerns

Option	Pros (rationale)	Cons	Recommendation
1P use Play billing	– 1Ps use the same features as 3P.	– Constrains 1P teams	Yes
Charge 1Ps a rev share.	– 1Ps "pay" same rev share as a 3P. – Managerial accounting precedents and mechanisms exist	– May not be credible. – Constrains 1P teams	May not required
Refund 1P rev share back to ecosystem	– Demonstrable proof that 1Ps rev share does not help Google.	– May not be credible. – Sets potentially concerning precedents for Google	No 1. Precedent set could be problematic 2. Will likely not be considered credible by competitors / regulators
Require 1Ps charge the same price btw Android, IOS	– Highly visible higher price on iOS exposes Play to predatory pricing arguments	– Constrains 1P teams	Yes – iOS pricing is a highly visible contradiction to our pricing / fairness arguments.
Require 1Ps to charge a price that does not undercut competitor pricing on Android	– Allows us to say that we do not undercut competitors	– Constrains 1P teams	Ideally, Yes - Pricing is an visible and this is an arguably objective way for us to show that we compete fairly

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Work in progress

Addressing communicating w/ their user concerns

Goal: Allow devs of "consumption-only" apps to message users about offers.

Principles

[redacted]

Risks: Games contagion, enforceability

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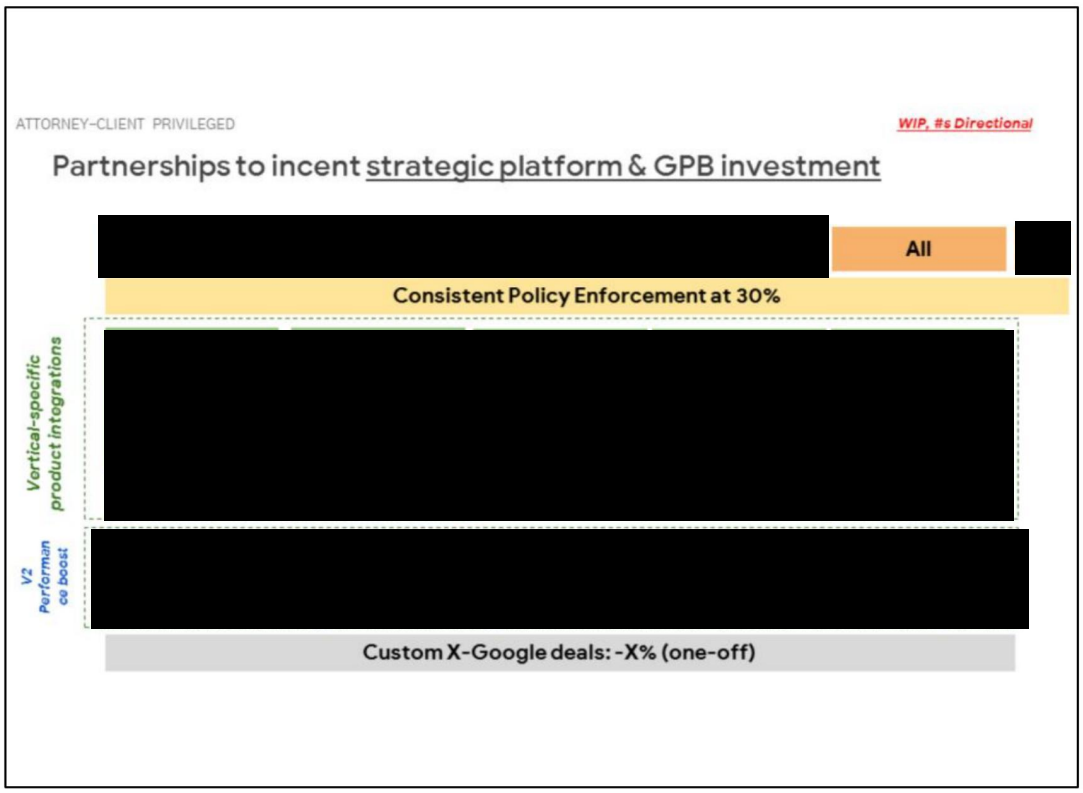


- Lean into custom programs and partnerships to enable:
- a) Emerging strategic surfaces that require GPB developers to drive adoption (e.g. [redacted]
- b) GPB where we believe it's important to avoid a consumption only experience
- Accelerator deals would range from [redacted] (depending on eligibility) and could include Hug-like incentives.
- Likely to target [redacted] (based on priority for a & b)
- Current LRAP program:
- [redacted] active partners in program. Top [redacted] drive [redacted] of total LRAP consumer spend (Total = [redacted] of subs H1 spend). Each deal is negotiated.
- Many active video streaming partners are not part of LRAP [redacted] but are integrated with GPB.

- **https://docs.google.com/document/d/15p-He058bHqwM6uHj_rKFt57gN2EuUk0VBWM_2_saYQ/edit?hl=en**

ATTORNEY-CLIENT PRIVILEGED PROPOSAL

Exclusive GPB vs. Multiple payment mechanisms - does it matter?

Yes. Why?

- Play Billing benefits **users** & increases trust in the platform:
  - Enhanced payment security & fraud prevention helps mitigate deceptive practices
  - Ability to pay via local forms of payment, in addition to credit card
  - Customer support / payments management in one place
- Play Billing benefits developers:
  - Reduces OpEx with 200+ forms of payment globally
  - Buyer acquisition (access to millions of FOPs on day 1)
  - Built in features to retain users & reduce churn
- Consistent GPB usage for digital goods allows us to heavily invest in our Android and Play infrastructure to ensure a safe and secure mobile experience at scale

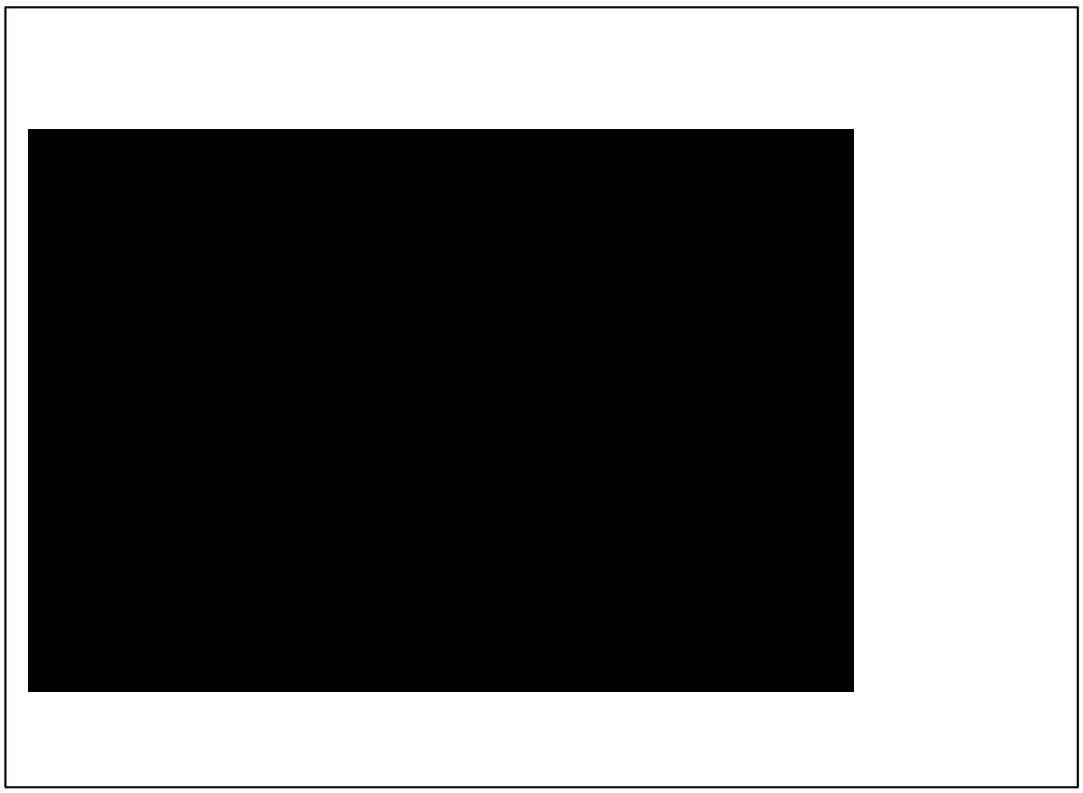
Id	Date	Text
1	08/02/2019 19:00:28	+pfeng@google.com +mloew@google.com have we had a conversation with the Chrome Autofill team about limiting access to autofill for digital goods sellers? We noticed that when you subscribe to Tinder via the native flow, you can easily grab CC info (which it seems like erodes this value prop of GPB)...

Appendix

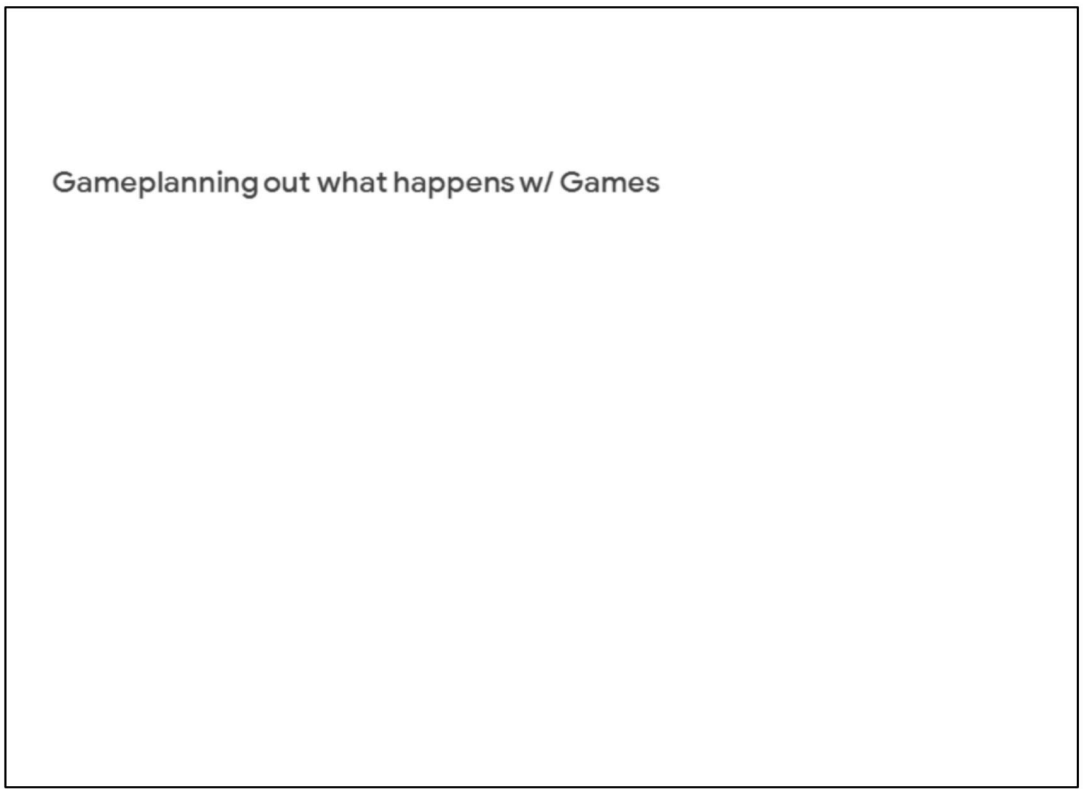
Revenue / Financial impact

<needed analysis>

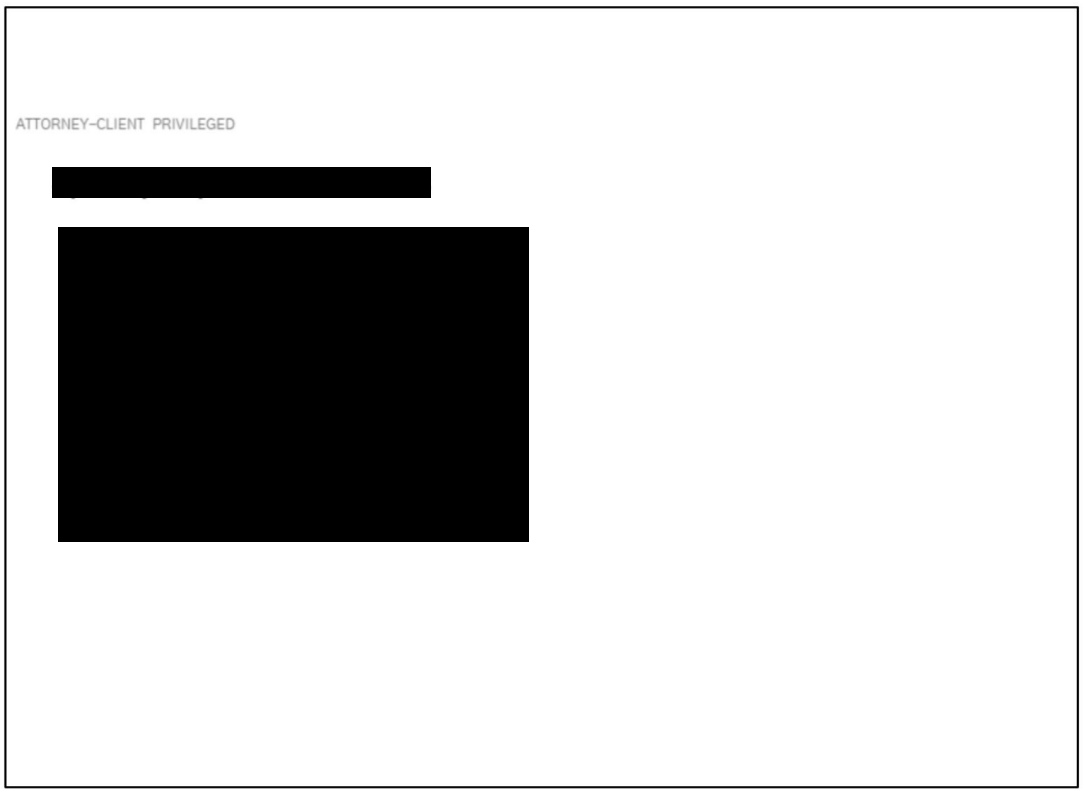
- Revenue impact of subs to 15%
- Consider impact of premium apps to 15%
- Consider impact to games revenue stream as more games go to subs…
  - (need assumptions about how much switchover to model)
- Consider impact of aggressive LRAP++ / ADAP++ plan
  - How low to go?
  - Who would it be offered to?
- Alternatives
  - [redacted]



- Ashley Madison: Canadian online dating
- Busuu (language learning app)


Gameplanning out what happens w/ Games

Id	Date	Text
2	08/02/2019 01:45:58	+pfeng@google.com what were your thoughts on what to add here? do you think we still need this if we don't change the rev share?
2	08/02/2019 01:45:58	I thought this was your slide. I don't think we need this.


ATTORNEY–CLIENT PRIVILEGED
[redacted]
[redacted]

Id	Date	Text
3	08/01/2019 22:29:26	+pfeng@google.com WDYT about merging this slide and the next into "regulatory concerns" and highlight that it's all from spotify? (will take a stab at a version)

Regulatory Update

Redacted - Privilege

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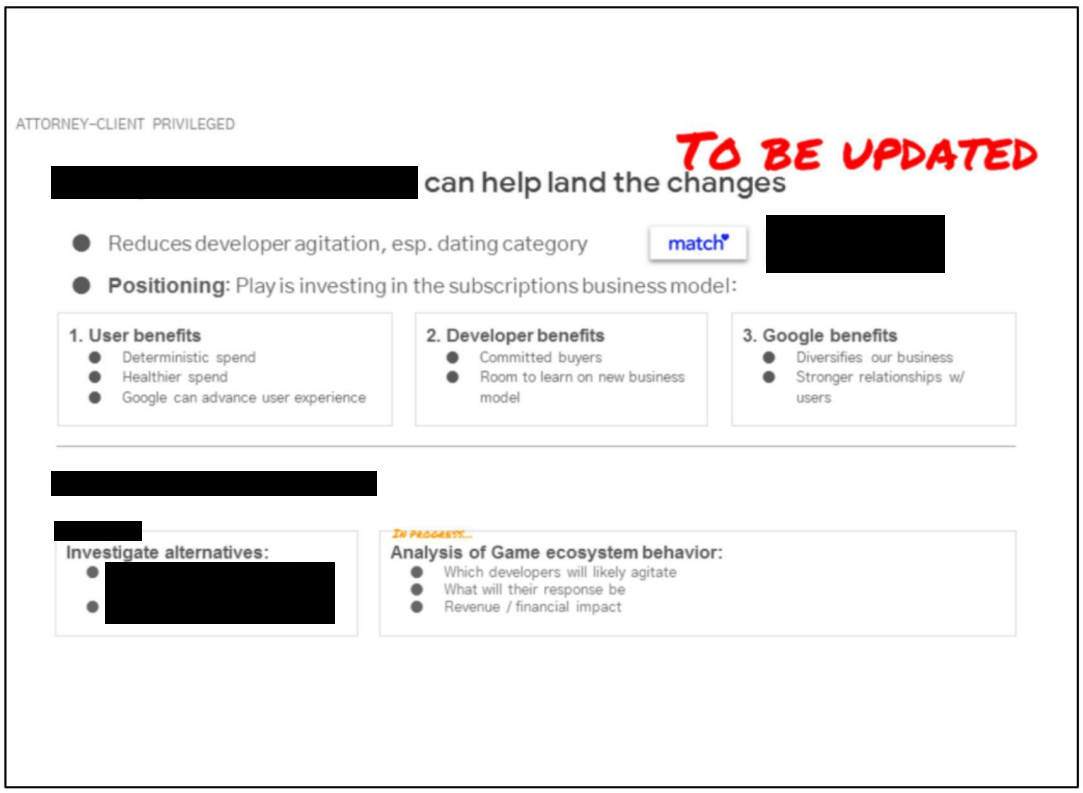
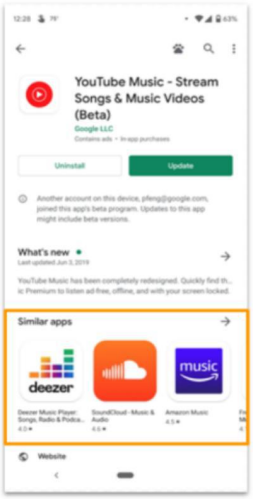


- Developer benefits : Committed buyers, new business model that needs refinement
- Google benefits : Diversifies our business, stronger relationships w/ users

Promoting 3Ps in the Play Store

App detail page for 1st Party apps includes a prominent ad unit promoting 3rd Party alternatives.

- Ensures users know about alternatives
- 3P alternatives will show at least 3x more than 1Ps.



Ad unit w/ 3P alternatives

Financial Impact

<this is still in progress>

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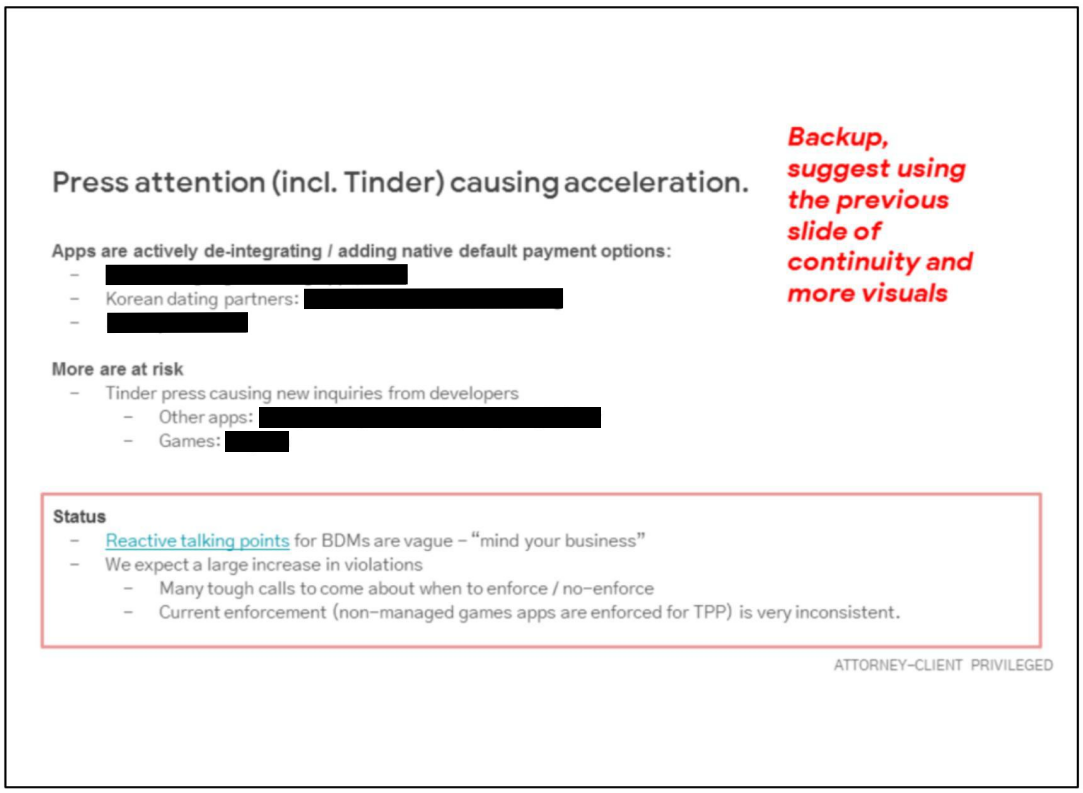

– We are starting to see an acceleration of the effects predicted.

Exhibit D16
Public Redacted Version

EXHIBIT 49

Message

From: Sameer Samat [ssamat@google.com]
Sent: 3/31/2022 5:13:09 PM
To: Shar Dubey [Sharmistha.Dubey@match.com]
CC: Peter Foster [Peter@matchmediagroup.com]; Donald Harrison [harrison@google.com]; Gary Swidler [gary.swidler@match.com]
Subject: Re: Following up

Shar,

Thanks for your note.

Thanks for your feedback on User Choice Billing. While we do not agree that Play Billing would disrupt the user experience we are glad to hear your feedback on the pilot. The pilot is at a very early stage and we have not determined if we can expand it yet, but we understand your interest and continue to be open to discussion.

With respect to economics, which I think you mentioned is the key issue, we are always open to continuing the conversation to find something that works, as we've been trying to do for the last 18+ months. As we've said previously, our service fees are lower than any other major app store at 15% for subscriptions. And if you choose to participate in the User Choice Billing we already offer in Korea, it will be 11% for transactions using your billing there. The economics have to make sense for us too, as the service fees support our business model and allow us to invest in the ecosystem.

While we are happy to have Sarah engage with Peter, I also wanted to remind you again that the 3/31 deadline still applies (as detailed in this help center article). Of course, we intend to continue to talk to try to find a path forward.

I spoke with Sarah yesterday and she will reach out to engage with Peter.

Sameer

On Wed, Mar 30, 2022 at 1:27 PM Shar Dubey <sharmistha.dubey@match.com> wrote:

> Sameer & Don
> Thank you for jumping on a call with us yesterday. Thought about all the issues some more and I think this is where we are.
>
> First, as I have said consistently, solving for user pain is my primary objective. Towards that end, on your offer to consider the S. Korea proposal, the option of having user choice when it comes to billing is definitely the better option. It will mitigate a lot of user confusion and pain. We won't have to worry too much about the feature gaps that still remain on Google Billing. So I am glad we are converging on this. We will start working with our teams to figure out how to implement this dual option model.
>
> On the economics though, there are important considerations to think through - not just impact to us financially, but to consumers and also the net earnings you collect from us. Android is unique in that you make revenue from us on direct ad spend as well as the app store fees you charge on GPB transactions. We spend a large amount of marketing dollars on UAC and the android platform to drive user growth (much more than the commission fees). These are already fairly low ROI as I had mentioned. A 15/11 - 30/26% commission structure (which you have proposed to the KCC but hasn't yet been settled) will make almost all of the marketing spend unprofitable, forcing us to raise price for consumers and meaningfully cut marketing spend.

The total ad spend + fees commission payment from us to you will end up being lower. And it will hurt user growth on the Android platform. In our view, this can't be a good thing for anyone.
Something for you to think about as you are evolving your thinking - especially in light of the fluidity of things unfolding around the world.

But we definitely want to figure out a solution soon in order to avoid disruption and hoping we can get to a productive outcome. I am also ccing Peter here to engage with your team as needed.
Thanks
Shar

On Mon, Mar 28, 2022 at 7:42 PM Shar Dubey <sharmistha.dubey@match.com> wrote:

Thanks Sameer and adding Gary. We should definitely jump on a call tomorrow to discuss (If you can have Erin work with Lynne to calendar).

We can talk through the points below tomorrow. To note that we've had "User Choice Billing" on Tinder for several years now. So am super interested in learning more about the pilot specifics you are looking to test.

And my primary objective is to prevent User Experience disruption followed by economic harm to users as well as our business (both Revenue and EBITDA) - and as we discussed, the revenue impacts are new information based on the status of GB feature set and performance.

Looking forward to discuss a solution tomorrow
Thanks
Shar

On Mon, Mar 28, 2022 at 6:41 PM Sameer Samat <ssamat@google.com> wrote:

Shar,

Thanks for your note.

If it makes sense we would be happy to do a call between you and Gary, Don and I and walk through all of this – really hoping we can find a resolution together.

There are a few things that you're mixing together and I'd like to ensure you understand them clearly before we discuss next.

First, there is the pilot we've announced for User Choice Billing. This is at an early stage to test an experience with a limited set of developers where users select between Google Play Billing and an alternate billing system on apps downloaded from Play, and we are just getting started. Happy to provide more information when we connect next if you want to learn more..

Second, there is the separate question of economics. From your email and our conversations it seems like this is the primary issue for you. And while we don't discuss the details of our relationships with other companies the information you've included in your note does not reflect arrangements we have.

Like any business, we charge for the services we provide and our service fee helps us continue investing in the ecosystem, to the benefit of users and developers like Match that have built and grown their businesses with us. As you know, we've been moving away from a one-size-fits-all approach and have been evolving our fee structure to address developers' different needs. Our fees are now lower than any other major app store. For Match's subscription services, we charge a 15% service fee.

So, there are two things here that are separate and distinct (the pilot and our business model). As an example in South Korea, where we do have user choice billing available for all developers, our service fee would be 15% with play billing and 11% when the user selects your billing for subscriptions. Given this is available now, I was wondering if this was interesting to you?

Given that you have previously mentioned that you had wanted 18% and that you currently pay higher service fees on other platforms, we believe our approach, of 15% for subscriptions, is fair and competitive.

Lastly, we have a different perspective on the legal issues mentioned in your message. Although we appreciate hearing your views, we don't think it will move the ball forward to respond to them, so we'll just leave it at that.

As I mentioned above, happy to connect on the phone -- happy to jump on tomorrow if it works for you.

best,

sameer

On Sat, Mar 26, 2022 at 4:08 AM Shar Dubey <sharmistha.dubey@match.com> wrote:
Thanks Sameer - looking forward to a positive resolution. Have a great weekend as well!
Shar

On Fri, Mar 25, 2022 at 8:48 PM Sameer Samat <ssamat@google.com> wrote:
Shar,

Thanks very much for your note. We will discuss this internally and come back to you monday with our thoughts.

Have a great weekend!

Sameer

On Fri, Mar 25, 2022 at 12:13 PM Shar Dubey <sharmistha.dubey@match.com> wrote:
Thanks Sameer for getting back to me - although I have to say I am disappointed that we haven't been able to resolve this yet. Esp given the discussion we've had about all the user pain and financial impacts we are going to be hit with if you push forward with your exclusive mandatory IAB for a select set of developers while simultaneously acknowledging the value of "user choice" with your partnership with Spotify that you just announced.

With the passage of DMA yesterday, it is now clear that this new model (mandatory exclusive IAB at 15% and 30% tax) you are forcing us into is outlawed/soon to be outlawed in almost half the world. It is already illegal in S. Korea and Netherlands (we don't yet have clarity from you on how to meet the Mar 31 deadline while still being compliant per those countries' laws) and is soon to be illegal in India and the EU.

And while your team has closed some of the feature gaps Google Billing has had for years relative to more mature subscription services like ours, there are still gaps which are going to hurt user experience and revenue. [redacted]

And with this additional tax, almost all of our marketing spend on Google UAC becomes unprofitable. As I had mentioned to you, paid marketing is the only source of growth in the US on Android for us. We will be forced to raise price for customers at a time when inflation is already hurting much of the user base most impacted by this.

I am still hoping you were sincere when you said you did not want to hurt our users or our business. So I think there are 2 reasonable paths we can take:
Option 1: "User Choice" option
- I was very happy to see you embracing the value of "user choice" in the blog post you sent regarding the Spotify deal. Similar to that, in this option, both 3P Billing and Google Billing are presented to the user (something we already have on Tinder and have been paying large fees to you for years). This will go a long way to solve some of the user pain (due to feature gaps) as well as some of the Revenue hits our platforms are anticipating
- We would deploy this across our platforms and globally assuming [redacted]
- We would work with you to help enhance your subscription services as well as any Android specific development opportunities the teams identify
This is much easier for us to deploy than all the crazy qualifiers and unquantifiable credits that were part of all the previous economic proposals

Option 2: Status Quo option
- Given that with the Spotify deal, you have opened the door to no longer solving for "ecosystem fairness" with these compliance rules, given the Dating specific ruling by the ACM or even due to the feature gaps that will uniquely hurt our business, we would accept an exception to compliance on 3/31 as an alternative to Option 1. Since you will now have to change policies again later this year, this avoids a lot of disruption to users and the business for a short period of time.

Since we last spoke, 2 big things have happened - DMA has passed and the 3/31 business model you are forcing us to comply with will be outlawed in half the world soon. And you have rightly acknowledged the value of "user choice" with the announcement of your Spotify deal. Which is why I am very hopeful that you all will work with us on either of the above options (both of these are simple enough to execute in short order) so as not to cause disruption to our users and our business.

Sincerely hoping to come to an agreement by Monday and let me know how best to engage with your teams,
Shar

On Fri, Mar 25, 2022 at 12:33 AM Sameer Samat <ssamat@google.com> wrote:

> Shar,
>
> I have been running around all day and didn't have a chance to give you a ring and it's a bit late now so I thought I'd drop you a quick note.

Thanks for our recent conversations. I talked with my team about the features you raised and I wanted to relay what I heard about the status. [redacted]

On economics, as you know, we've made a series of proposals in the past – and we've taken a leadership position on service fees (15% on subscriptions).

When I caught up with Sarah today on all of this she mentioned Peter had given her a call – but a number of the things he said didn't seem to properly capture our conversation.

So to move things forward quickly I think it would be best to avoid the telephone game and have your team talk directly with Sarah about any help you need to align with the 3/31 requirements so we can fast track assistance on our side as well as any business proposal that you have.

Hope all is well, and congrats on the recent launch! Look forward to hearing more about how it's going!

best,
sameer

On Wed, Mar 23, 2022 at 11:50 AM Shar Dubey <sharmistha.dubey@match.com> wrote:

> Thanks Sameer! The India info is timely given some of my conversations later this afternoon.
> Meanwhile we are also sharpening our pencils on the economic impact and it is worrisome to see the rollup coming in at higher numbers than the headline number the teams were previously discussing - despite the subscription rate going down from 30% to 15%. The biggest reason for this is the revenue declines the businesses are now estimating as a result of the various feature gaps and consumer impact we had discussed.
> Hence looking forward to your thoughts on that and sincerely hoping we can solve
> Thanks again
> Shar
>
> On Wed, Mar 23, 2022 at 10:49 AM Sameer Samat <ssamat@google.com> wrote:
>
> > Hi Shar,
> >
> > Wanted to get back to you on your India timeline. We posted this externally and explained what I mentioned to you when we spoke. I would point people to that and certainly we are available to anyone who would like to discuss further -- you can point them to us.
> >
> > On the other topics we discussed, I am discussing with the team and will come back to you with thoughts.
> >
> > Thanks very much!
> >
> > sameer

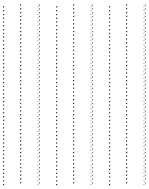

Exhibit D17
Public Redacted Version

EXHIBIT 52

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

STATE OF UTAH 160 E 300 S, 5th Floor P.O. Box 140872 Salt Lake City, UT 84114 STATE OF NEW YORK 28 Liberty Street New York, NY 10005 STATE OF NORTH CAROLINA P.O. Box 628 Raleigh, NC 27602 STATE OF TENNESSEE P.O. Box 20207 Nashville, TN 37202 STATE OF ARIZONA 2005 North Central Avenue Phoenix, AZ 85004 STATE OF COLORADO 1300 Broadway, 7th Floor Denver, CO 80203 STATE OF IOWA 1305 E. Walnut St., 2nd Floor Des Moines, IA 50319 STATE OF NEBRASKA 2115 Nebraska State Capitol	Case No. 3:21-cv-05227

Lincoln, NE 68509-8920

STATE OF ALASKA
1031 W. Fourth Avenue, Suite 200
Anchorage, AK 99501

STATE OF ARKANSAS
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Little Rock, AR 72201

STATE OF CALIFORNIA
455 Golden Gate Ave, Suite 11000
San Francisco, CA 94102

STATE OF CONNECTICUT
165 Capitol Avenue
Hartford, CT 06106

STATE OF DELAWARE
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Wilmington, DE 19801

DISTRICT OF COLUMBIA
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Washington, D.C. 20001

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PL-01, The Capitol
Tallahassee, FL 32399

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Jefferson City, MO 65102

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Helena, MT 59620

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Carson City, NV 89701

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Newark, NJ 07102

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Bismarck, ND 58503-5574

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Oklahoma City, OK 73105

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Salem, OR 97301

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Providence, RI 02903

STATE OF SOUTH DAKOTA
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Pierre, SD 57501

STATE OF TEXAS
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Austin, Texas 78701

STATE OF VERMONT
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Richmond, VA 23219

STATE OF WASHINGTON
800 Fifth Ave., Suite 2000
Seattle, WA 98104

STATE OF WEST VIRGINIA
812 Quarrier St., First Floor
P.O. Box 1789
Charleston, WV 25326

Plaintiffs,

v.

GOOGLE LLC, GOOGLE IRELAND LIMITED, GOOGLE COMMERCE LIMITED, GOOGLE ASIA PACIFIC PTE. LIMITED, GOOGLE PAYMENT CORP., and ALPHABET INC.,

Defendants.

Expert Report of Dr. Marc Rysman

October 3, 2022

52. Google documents indicate that sideloading is limited. For example, Google data indicates that around [redacted] of apps on active Android smart mobile devices were "downloaded by a user from non-Play sources, including from direct downloading and third-party app stores" from February 2019 to December 2020.[78]

D. In-App Billing Services

53. After downloading applications, many apps provide consumers the option of purchasing extra digital content within the app, *e.g.,* to upgrade the user experience or unlock additional features.[79] For the remainder of this report, I use "in-app purchase" to mean purchasing digital content from within the app where the content is used and without the user exiting the "mobile app environment."[80] The revenue generated from in-app purchases far surpasses the revenue from purchases of paid app downloads. For example, Google's monthly app revenue data for U.S. transactions indicates that paid app downloads account for only [redacted] of total app revenues for the years 2019-2021, while subscriptions and in-app content purchases account for

---

[78] Google, "Apps by Source," April 26, 2021, GOOG-PLAY-001508603 (data as of December 1, 2020). These data reflect the monthly "cumulative number of apps on devices that… pinged the Play store in the past 28 days." With these data, Google calculates a "% sideloaded app" of [redacted] over the 2019 and 2020; however, this higher share mainly includes "[a]pps that are pre-installed on the user's device that do not update through Play." In terms of how Google has measured / captured this data, *See* Cunningham (Google) Deposition, pp. 442-443 ("Q. …How does Google – or to back up, what system does Google use to determine the cumulative number of apps available on these devices? A. …But as far as the produced data is concerned, my understanding is that when we talk about the number of apps, this reflects a count of how many instances there were of apps that were seen to be installed on the devices in question. Q. And that's the number of apps installed on the device at the time of the scan used to create this data? A. That's correct. That is my understanding, that the count is made up of the apps that are present on the device and reported as part of that Play Protect scan."). *See also* Cunningham (Google) Deposition, p. 438 ("Q. So if I'm understanding your testimony correctly, effectively this dataset is devices that have had Google Play Protect enabled in the past 28 days; is that right? A. Yes, my understanding is that the information reflected here, the devices in the scope of these –of the data that results from the auto-scan requests, the Play Protect scans, referred to as these pings, are devices that within the past 28 days from whatever date in question has information recorded would have had a scan performed and that network request successfully made in that 28-day period"). I also understand that this data is worldwide excluding China: "With respect to GOOG-PLAY-001508603, we confirm this data is worldwide excluding China." *See also* Letter from Benjamin G. Bradshaw, O'Melveny, to John D. Byars, Bartlit Beck, April 29, 2022.

[79] *See* Google, "Make in-app purchases in Android apps," available at https://support.google.com/googleplay/answer/1061913?hl=en. In-app payments occur in both free and paid apps (on top of the initial payment to download the app). *See* Adjust, "What is an in-app purchase?" available at https://www.adjust.com/glossary/in-app-purchase/.

[80] Cramer (Google) Deposition, p. 426 ("Q. And IAPs here means in-app purchases, right? A. Right. Yes.").

Billing is not available[537]) do not use Google Play Billing, I understand it is technically feasible for developers to use these alternatives to Google Play Billing.[538]

246. Some prominent developers handle in-app billing services in-house. For example, Spotify,[539] Netflix,[540] and Tinder[541] are examples of apps that historically have not used Google Play Billing for Android In-App Billing Services.[542] Additionally, Epic Games announced its own in-app billing system in 2020.[543]

247. Some developers subcontract aspects of Android In-App Billing Services—including the SDK or APIs—to standalone payments entities that do not have app stores. Square, for example, offers a variety of payments products, including point-of-sale systems for retailers and restaurants.[544] In 2019, Square launched an "In-App Payments SDK" for multiple mobile OSs,

---

[537] *See*, *e.g.*, Loew (Google) Deposition, p. 199 ("Q And is Google Play Billing available in every country where Google Play is available? A Google Play Billing is not available in every country that Google Play is available. Q Google Play Billing is not available in about 50 countries where Google Play is available. Does that sound right? A I don't know the list off the top of my head, so I can't say yes or no. Q But there are some number of countries where Google Play is available and Google Play Billing is not available; correct? A That is correct.").

[538] *See* Lockheimer Deposition, p.83 ("Q. Okay. Is it, as we sit here now, technically possible -- aside from whatever policies Google has in place, is it technically possible for a developer to offer an in-app purchase using a payment solution other than Google Play Billing? A. Technically, yes, the technology certainly exists to accomplish that. Yes.").

[539] Rasanen (formerly Google) Deposition, p. 307 ("[redacted]").

[540] Rosenberg (Google) Deposition, p. 269 ("Q. So let's take these one by one. Was Netflix on Android at the time of this email? A. I believe so. Q. And was it using Google Play billing? A. I don't – I don't think so").

[541] Lim (Google) Deposition, pp. 505-506 (explaining that Netflix, Hulu, and Tinder did not use Google Play Billing for in-app purchases of digital content).

[542] Google, "Google / Match Group Exec Summit August 2019," August 2019, GOOG-PLAY-002438751-754, at 753 ("In April, Tinder removed Google Play In-App Billing as the default billing solution in favor of their native solution"); Google, "Spotify – Next Steps," December 2020, GOOG-PLAY-006997722-751, at 723 ("[redacted]").

[543] The Fortnite Team, "Announcing Epic Direct Payment on Mobile," *Epic Games*, August 13, 2020, available at https://www.epicgames.com/fortnite/en-US/news/announcing-epic-direct-payment-on-mobile.

[544] Square, "A point of sale for however you sell," available at https://squareup.com/us/en/point-of-sale.

Moreover, I also conclude that Google uses its market power in Android App Distribution to tie the use of Google Play Billing for digital content on apps distributed through Google Play.

610. To assess the harm to consumers caused by Google's anticompetitive and exclusionary conduct, I develop a model of monopolistic competition between apps, based on Church and Gandal (1993), in which developers supply apps and in-app content and compete on prices charged to consumers. I use the model to calculate separate damages for two effects that a lower commission and more Play Points would have had, but for Google's anticompetitive conduct, on consumers' welfare, including a direct effect ("overcharge"), a welfare effect through increased varieties/apps, as well as a combined total effect.

611. I provide several measures of damages that variously hold entry constant, hold prices constant, or allow for a total effect on consumer welfare in response to Google's high commissions and low discounts. While the total welfare effect accounts for all of the economic effects of the high commissions and low discounts, to be conservative I take the minimum of the total welfare damages and variety damages, where, in the latter, I hold the price constant, (*i.e.*, no changes in app pricing in response to commission changes). I therefore find damages in the Android App Distribution and In-App Billing Services Markets of roughly [redacted] for the period August 16, 2016, to June 5, 2023 ("the damages period"). I can also use the model to calculate damages associated with the tie of Android in-app billing services only, which I find to be approximately [redacted]

Marc Rysman, Ph.D.

October 3, 2022

Exhibit D18
Public Redacted Version

EXHIBIT 18

INTENSITY

INTENSITY, LLC
5345 Towne Square Drive, Suite 135
Plano, Texas 75024
469.257.5580
intensity.com

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

IN RE GOOGLE PLAY STORE ANTITRUST LITIGATION

THIS DOCUMENT RELATES TO:

Match Group, LLC, et al. v. Google LLC, et al.,
Case No. 3:22-cv-02746-JD

Case No. 3:21-md-02981-JD

EXPERT REPORT OF
Steven Schwartz, Ph.D.

Steven Schwartz, Ph.D.

October 3, 2022

16. Damages calculation

16.1. Overview

(469) Google claims that its GPB service fee is compensation to Google for both its payment processing services and the value Google claims developers receive from being listed on GPS itself. Therefore, and as discussed in Section 13, in the competitive but-for world, Google would implement two distinct fees reflecting the separate services provided by GPS and GPB:

a. A charge for GPS services, *i.e.*, Discovery Value and Delivery Value.

b. A charge for IAP processing services, *i.e.*, FOP Value.

(470) In my calculation of damages, I assume conservatively that Google correctly characterizes the GPB service fee's components. Therefore, to calculate damages, I conservatively assume the Discovery and Delivery Values of GPS are the same in the actual and the but-for worlds.[1088] Thus, damages to Match Plaintiffs are driven by the supracompetitive rates for Google's IAP processing services, reflecting Google's claimed FOP Value. To anticipate, I conclude that Tinder and OkCupid have been damaged by Google's supracompetitive IAP processing fees even after accounting for the Discovery and Delivery Value of GPS.[1089]

16.2. Match Plaintiffs' transactions subject to damages

(471) Starting at the latest in January 2015, Humor Rainbow, Inc. began paying GPB service fees of approximately 30% of transacted OkCupid revenue. See Attachment D-2. Starting at the latest in January 2016, the entity then operating Tinder began paying GPB services fees of approximately 30% of Tinder's transacted revenue.[1090] See Attachment D-2. For both OkCupid and Tinder revenues, GPB services fees have remained at approximately 30%. See Attachment

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1088 This approach is conservative because, in a competitive environment, the Discovery value of GPS to Match Plaintiffs is the upper-bound on their willingness to pay for the discovery services. By assuming that Google captures all of the value it provides to Match Plaintiffs, I ignore the economically more likely result that a competitive price would allow Match Plaintiffs to retain some of the value (that is, economic rents) associated with the discovery service.

1089 As noted in Section 12.1.1, I understand that PlentyofFish has implemented GPB as an option as part of testing in certain countries since 2017 and has only fully implemented GPB in certain geographies. PlentyofFish Media ULC sales data span the time period from January 2015 through December 2021. Because PlentyofFish was implementing on a testing basis and in certain geographies over the period for which I have been provided data, the service fees paid are inconsistent with Google's standard GPB rates.

1090 Plaintiffs' Supplemental Responses and Objections to Defendants' Interrogatories, 9/16/2022, at Supplemental Response to Interrogatory No. 22. ("The Tinder app was released on the Google Play Store in July 2013. At that time, Tinder was owned and operated by a Match Group, Inc. portfolio entity, and, in 2017, became owned and operated by plaintiff Match Group, LLC, its current owner and operator.")

D-2. I understand that because of the statute of limitations, Match Plaintiffs cannot seek damages before July 7, 2017. Thus, while Match Plaintiffs have paid Google supracompetitive IAP processing fees dating back to at least January 1, 2015, the damages period for my calculation begins on July 7, 2017.[1091]

(472) Match Plaintiffs have produced reports of global revenues, service fees, and downloads by app (*i.e.*, Match, OkCupid, OurTime, PlentyofFish, and Tinder) on a monthly basis from January 2015 through December 2021. See Attachments X-1 through X-5. Within each report, revenues and service fees are further divided based on where the transactions were processed. See Attachments X-1 through X-5. For example, Tinder has iOS revenue and Apple IAP service fees; GPB revenue and GPB service fees; Android non-GPB revenue and Android non-GPB service fees, etc. See Attachments B-5 and X-5. Thus, Match Plaintiffs' total revenue processed through GPB and the corresponding total service fees charged by GPB are readily calculable.

(473) Google has produced transaction-level data for Match Plaintiffs' transactions processed through GPB. These data include transactions made in the United States only. For Tinder and OkCupid, Google produced data from October 2014 and December 2012, respectively, through May 2022. I have aggregated the transaction-level data to arrive at monthly totals beginning in 2015 for revenue, GPB service fees, and total transactions processed through GPB in the United States. See Attachment X-6. Since the Match Plaintiffs' data do not include global transaction counts, I used the Google data to estimate global transaction counts. For each month and for each app, I calculated the U.S. revenue per transaction. See Attachment X-6. Then, I divided the global revenue processed through GPB by the corresponding United States revenue per transaction. See Attachment D-2.

(474) During the damages period (7/7/2017–12/31/2021), OkCupid paid fees for the following global transactions (number and dollar value) processed through GPB (and subject to damages). See Attachment E-1.

[redacted]

[redacted]

[redacted]

[1091] I also include a damages calculation that starts May 9, 2018, four years prior to Match Plaintiffs' complaint filing.

Exhibit D19
Public Redacted Version

EXHIBIT 10

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

IN RE GOOGLE PLAY STORE ANTITRUST LITIGATION	Case No. 3:21-md-02981-JD
THIS DOCUMENT RELATES TO:	MDL No. 2891
Epic Games Inc. v. Google LLC, et al., Case No. 3:20-cv-05671-JD	
In re Google Play Consumer Antitrust Litigation, Case No. 3:20-cv-05761-JD	
In re Google Play Developer Antitrust Litigation, Case No. 3:20-cv-05792-JD	
State of Utah, et al., v. Google LLC, et al., Case No. 3:21-cv-05227-JD	
Match Group LLC, et al., v. Google LLC, et al., Case No. 3:22-cv-02746-JD	

HIGHLY CONFIDENTIAL - UNDER PROTECTIVE ORDER

REMOTE VIDEOTAPED DEPOSITION BY VIRTUAL ZOOM OF
PURNIMA KOCHIKAR
Wednesday, August 31, 2022

Reported By: Lynne Ledanois, CSR 6811

PURNIMA KOCHIKAR,

having been duly sworn, testified as follows:

EXAMINATION

BY MS. MOSKOWITZ:

Q Good morning, Ms. Kochikar. My name is Lauren Moskowitz, as you heard. I represent Epic Games and I'll be starting your deposition today.

If you could just please state your full name for the record.

A Purnima Kochikar.

Q And can you provide your address, please?

A 88 King Street, Apartment 121, San Francisco, California 94107.

Q Thank you. Today we'll be -- I'll be asking you questions, you will be providing answers. I'm going to do my best to avoid speaking over you. I may do it if I can't tell you were done.

But I would ask that you try to also wait for me to finish my question before you start your answer.

Is that okay?

A Yes.

Q And please, if at any point you don't understand one of my questions, please ask me for

Q Do you recall when you learned that?
A Days before the launch. I think in like mid 2018 perhaps, days before the launch was going to happen.
Q You learned that by Mr. Sweeney sending an email to Google?
A I learned that through Jamie Rosenberg telling me he received an email.
Q And that he had received an email from Mr. Sweeney?
A Yes.
Q Direct downloading is the process by which a user downloads an app directly from a developer's website as opposed to going through Google Play; correct?
A Yes.
Q And in order to actually do a direct download, a user has to enable unknown sources in the security settings for the Android device; right?
A Yes.
Q And the unknown sources setting is disabled by default on all Android devices; right?
A Yes.
Q So a user would have to go in and turn on unknown sources to begin the direct downloading

process; right?

A Yes.

Q And once they took that step to turn on unknown sources, the user then faces a number of steps and screens to download the app from the developer's website; correct?

A Yes.

Q And some of those steps are warning screens that the user is confronted with; correct?

A Yes.

Q At some point did you learn that Epic intended to launch Fortnite also through the Samsung Galaxy store?

A Yes.

Q Do you recall when you learned that plan?

A I believe Mr. Sweeney shared that at the same time.

Q At the same time he said he was going to be launching through direct download, he also indicated that they would be launching through the Samsung Galaxy store?

A I believe he said other means.

Q And other means at the time indicated to Google that that meant Samsung Galaxy store?

A Android is open, there are multiple sources,

A No.
Q Was Epic discussed with Activision Blizzard King at any point in time?
A Not that I can recall.
Q Google was at least aware of a risk that ABK could partner with Epic in connection with a launch outside of Google Play; right?
A Probably.
Q Do you personally consider that as one of the ways that they could explore distributing off of Play?
A So I don't know if I actually put the risk as -- Epic has -- sorry, ABK has a PC store with Blizzard and they have the ability, so I think I was more focused on the capabilities that they have versus the risk of Epic and ABK getting together to do this.
Q In other words, given ABK's experience with an existing app store outside of Android, you thought the stronger risk was that ABK was preparing and able to offer its own Android app store and didn't need to lean on Epic for that?
A I would say yes for the former phrase that they could -- that they and less on the -- and didn't need to -- wasn't -- I don't think it was part of my consideration, if I reflect back.

[redacted]

Q Okay. But just to confirm, you did not do any investigation to see whether those conversations happened?

A No. I might have misread the topic. I was thinking it was much more about the deal and the negotiation and I knew that I was involved and I

didn't do any other investigation on that topic.

Q One of the other Hug targeted developers was Riot Games, as you mentioned earlier; right?

A Yes.

Q Google, in fact, did sign a Project Hug deal with Riot?

A Yes.

Q And one of the risks that Riot presented was that Riot would launch its game outside of Google Play?

A Yes.

Q Let's do another document. Give it one chance to load here.

MS. MOSKOWITZ: It will be, when it's loaded, GOOGLE-PLAY-007424789 through 4790. This will be PX1523.

(Exhibit 1523 was marked for identification by the court reporter.)

THE WITNESS: Not loaded yet.

BY MS. MOSKOWITZ:

Q No problem, I was late in asking for it.

A Yes, I have it.

Q This is a document titled "Riot GVP Deal."

Do you see that?

A Yes.

Q That's Riot Hug deal; right?
A Yes.
Q This is a document that you were involved in creating?
A Yes, I would have been.
Q And this is a document that you created and maintained in the ordinary course of your business at Google?
A Yes.
Q Does it sound right that this is from February 22?
A Yes.
Q Do you recall this document looking at it today?
A Yes.
Q This document provides the rationale for the Project Hug deal that was offered to Riot; is that right?
A Yes.
Q Who was the audience for this document? Why was it put together?
A It either is to get approval to go to BC or to BC. Usually these are internal documents.
Q The first sentence says, "Your approval is needed for the current GVP offer," in the first

sentence there.

Do you see that?

A Yes.

Q Did the Riot Hug deal, though, need separate Business Council approval?

A I believe and -- no, I don't -- did we go back to BC? I don't remember if we went back to BC.

Riot was unique in the sense that we didn't -- that they had no title on mobile.

And so there was -- we had to make some assumptions on how big -- with everybody else that were currently on Play and mobile and we had clearer data. And so whenever we are making extensions outside of the norm, we need to get additional approvals.

Q Okay. So the additional approval was a recognition that Riot didn't have as much of an established presence on Android yet?

A On mobile at all.

Q Mobile at all, okay.

A Yes.

Q So the con -- there is a "Context" section right near the top.

Do you see that?

A Yes.

markets now as a conversation. And we are actively working with them to come up with a plan of how to work on that.

Q All right. So why don't you look in your folder at PX15 --

MS. NARANJO: Lauren, before we jump to another exhibit, is this a good breaking point for lunch?

MS. MOSKOWITZ: Sure. Yes. That's fine. Let's go off the record.

THE VIDEOGRAPHER: Going off the record. The time is 12:50 p.m.

(Recess taken.)

THE VIDEOGRAPHER: We're back on the record. The time is 1:24 p.m.

BY MS. MOSKOWITZ:

Q Ms. Kochikar, before the break we were talking about Supercell.

Do you remember that?

A Yes.

Q Supercell informed Google that it was working on launching a web store; right?

A Yes.

Q And the web store was going to offer digital items for purchase that could be used in

game on Android; right?

A Yes.

Q And Google would not make money on purchases made on Supercell's web store?

A Yes.

Q And Google was concerned that Supercell's decision to create a web store could attract the attention of other large developers to follow suit; right?

A Yes.

Q And there was a proposal that was put together that was presented to the PEX.

Do you recall that?

A There were a couple. Which one are we talking about?

Q So the one I'm thinking of is the emerging markets idea.

A Yes.

Q Was that also presented to the Business Council --

A Yes.

Q Was that --

A Sorry, I'm losing my voice. Yes.

Q No problem. If you ever need to grab water, please do. I will do that right now.

A Yes.

Q Google did not remove Spotify from Google Play for noncompliance with its billing policy?

A Neither Spotify nor other apps because our policy on the app side was open to misinterpretation. It was very clear for games.

Q And you're saying that the policy was not clear as to whether it applied to in-app subscriptions?

A It wasn't clear. The policy was written in a way to suggest that if the app -- if the content could be used in other places, then they would not need to use billing.

Q And that included purchases of subscriptions?

A It included transactions within the app, whether subscriptions or in-app purchases.

Q And so Google has never removed a nongame app developer's app from Google Play for noncompliance with billing policy?

A I'm sure we have. That is the inconsistency that people were raising with us.

Q In March of 2022 Google announced that Spotify would be offering Google Play Billing alongside Spotify's proprietary billing solution?

A Yes.

Q And Google has not announced that any other developer can make its app available with both Google Play Billing and their own third-party billing separate from Korea; right?

A Yes. We are actively seeking applications to expand the pilot right now.

Q Is there any developer that has advanced in reaching a deal where they will have the ability to offer side by side Google Play and proprietary billing solutions?

A We don't need -- it's a pilot program, so they would apply and they would be based on criteria and evaluation they would -- if they qualify, then they would be included. We don't necessarily need a deal per se.

We are actively working on it and, you know, we should have something more concrete very soon.

Q Who are the developers that you expect to be able to benefit from that program?

A All types of developers. It's much more about their willingness to comply with our security requirements, do to the payment flows, et cetera.

There's both the user experience and the

I, LYNNE M. LEDANOIS, a Certified Shorthand Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth; that a record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction; that the foregoing transcript is a true record of the testimony given.

Further, that if the foregoing pertains to the original transcript of a deposition in a Federal Case, before completion of the proceedings, review of the transcript [X] was [] wasn't requested.

I further certify I am neither financially interested in the action nor a relative or employee of any attorney or party to this action.

IN WITNESS WHEREOF, I have this date subscribed my name.

Dated: September 1, 2022

Lynne Marie Ledanois

LYNNE MARIE LEDANOIS

CSR No. 6811

Exhibit D20
Public Redacted Version

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Exhibit 12
to
C. Cramer Declaration

Exhibit D21
Public Redacted Version

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Exhibit 13
to
C. Cramer Declaration

Exhibit D22
Public Redacted Version

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Exhibit 14
to
C. Cramer Declaration

Exhibit D24
Public Redacted Version

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Exhibit 48
to
C. Cramer Declaration